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USSR Report

TRANSPORTATION

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USSR REPORT

TRANSPORTATION

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CIVIL AVIATION

AVIATION REPAIR PLANT DIRECTORS ON QUALITY CONTROL MEASURES

Moscow VOZDUSHNYY TRANSPORT in Russian 29 Dec 84, 3 Jan 85

[Responses to editorial "The Quality of Aircraft Maintenance" received from G. Slesarevskiy, director of Civil Aviation Plant No 406 in Aktyubinsk; V. Timoshkin, chief of the OTK [technical control department] of Civil Aviation Plant No 400 at Vnukovo; Yu. Davydov, director of Civil Aviation Plant No 421 in Vinnitsa; B. Dmitriyev, director of Civil Aviation Plant No 21, and G. Ivanov, secretary of the plant's party organization, in Leningrad; A. Kudrin, director of Civil Aviation Plant No 410 in Kiev; and V. Tereshkin, director of Civil Aviation Plant No 31 in Shchelkovo]

[29 Dec 84 p 2]

[Text] The editorial "The Quality of Aircraft Maintenance" (VOZDUSHNYY TRANSPORT No 102, 25 August 1984) has evoked a ready response at civil aviation plants. The replies that came to the editorial office (14 were received) attest that special plans and measures have been developed in connection with the problems raised in the article, new reserves which make it possible to improve the quality of maintenance work are being introduced, and technical control is being reinforced.

The editorial "The Quality of Aircraft Maintenance" was studied attentively at a conference of the plant's command management and at general meetings in the shops. Steps are being taken to improve the quality of work. Quality problems are being examined every 10 days at critiques in the shops. A report by the chief of the technical control department is heard at a general plant critique. Minutes are recorded on materials of the conference in which measures taken to improve maintenance quality, those responsible for carrying them out, and the periods for their completion are indicated. Issuance of orders for the plant related to the quality of aircraft maintenance over the past month has become the rule.

Quarterly technical conferences are being held jointly with representatives of operations enterprises.

An important role in the struggle for quality is assigned to the staffing of production with skilled personnel. In accordance with the decree of the Ministry of Civil Aviation's collegium "On measures to increase the production and repair of aircraft engines" of 29 October 1981, the delivery of GTD-350 aircraft engines from major overhaul at our plant is being increased every year. In this connection, the plant continues to experience a shortage of skilled specialists. In order to staff the work force of the aircraft engine repair shop, the OTK organization and the "Nadezhnost'" [Reliability] group, the plant urgently needs mechanical engineers for ground operations or maintenance of airplanes and aircraft engines. [Signed] G. Slesarevskiy, director of Civil Aviation Plant No 406, Aktyubinsk.

* * *

The editorial "The Quality of Aircraft Maintenance" was discussed on the plant's quality day. In the process, it was noted that complaints were repeatedly presented to the plant in the 1981-1983 period concerning the quality of aircraft component repair. This year they were reduced significantly, although there still are a considerable number.

The basic shortcomings in ensuring the quality of maintenance also exist at our plant. With the aim of eliminating them, a number of steps have been taken to reorganize the work of the technical control department and to revise the economic incentive system for specialists for quality in aircraft maintenance and increase each one's responsibility for the quality of work performed. As a result, the basic indicators which characterize the quality of aircraft equipment have been improved. The number of complaints presented to the plant has been substantially reduced.

But we believe that what has been done is far from enough. For this reason, we are persistently continuing work to improve the quality of maintenance.

In our opinion, it is expedient to discuss ways of eliminating shortcomings in ensuring quality both at our plant as well as at other civil aviation plants on the pages of VOZDUSHNYY TRANSPORT. [Signed] V. Timoshkin, chief of the OTK of Civil Aviation Plant No 400, Vnukovo.

* * *

An open party meeting of the plant's communists on the newspaper's article was held with the agenda: "Tasks of the party organization in improving the quality of work turned out." A specific plan of measures has been drafted, aimed at improving the quality of work turned out and increasing the high standards of production with good working conditions. [Signed] Yu. Davydov, director of Civil Aviation Plant No 421, Vinnitsa.

[3 Jan 85 p 3]

[Text] Responses to the editorial "The Quality of Aircraft Maintenance" (VOZDUSHNYY TRANSPORT No 102, 25 August 1984) continue to come in to the editorial office.

One senses in the replies the collectives' deep interest in improving production technology, raising the level of professional skill of workers and employees, and reinforcing discipline, which will make it possible to ensure high quality in aircraft maintenance. We are publishing some of these materials today.

VOZDUSHNYY TRANSPORT's editorial of 25 August, "The Quality of Aircraft Maintenance," evoked a ready response in our collective. It has been studied at a conference of the plant's management.

The plant's collective and its management clearly realize that day-to-day work on matters of production quality is necessary, and that a great deal has not been done yet.

Since 1979 a comprehensive system for quality control in aircraft maintenance (KSUKRAT), registered by the USSR Gosstandart [State Committee for Standards], has been functioning at the plant. This system is having a positive effect both on the quality of production as well as the level of organization in managing the production process.

One of the main directions of technical progress at the plant is the renovation of sections which is being carried out extensively without stopping production, which in direct proportion is having a positive effect on the quality of maintenance as well as on labor productivity and improvement in working conditions. In recent years, 33 production sections have been renovated, including sections for washing equipment removable from helicopter airframes, painting the removable equipment with the use of infrared drying, and the disassembly of helicopters' transmission units and rotor systems. In the near future, the section for repairing helicopter electrical equipment will be put into operation after renovation.

An entire combination of measures has been put into effect to increase the reliability of hydraulic system operation, which has completely ruled out cases of helicopter hydraulic system failures which are the fault of maintenance workers. Significant attention is being devoted to the technological assurance of maintenance quality. Over the years of the 11th Five-Year Plan, 36 new technological processes were introduced, the procedures in effect for maintaining a helicopter and its components were reexamined, a metrological study of technical documentation, equipment and accessories was conducted, and the inspection and testing of measurement devices were improved.

Despite the work carried out to improve maintenance quality, there are still deficiencies which show up during operational checks by the OTK and overall inspections. As analysis of these deficiencies has shown, the overwhelming majority of them were permitted by workers with 1 to 1.5 years of service, and this category of workers also constitutes the largest percentage of personnel turnover.

In order to further improve the quality of aircraft maintenance at the plant, measures are being taken which should lead to improvement in this work. They include intensification of educational work, increasing personal responsibility for work results, and reinforcing performance discipline; improvement in technological processes and regulation and more precise definition of the means of verification; improvement in the methods of verification; improvement in the organization of technical training and increasing the skills of those who perform the work and engineering and technical personnel; more thorough and persistent work with industry, improvement in production organization, and so forth.

The newspaper's editorial has provided new impetus for the plant's collective in solving the problems of improving the quality of aircraft maintenance. [Signed] B. Dmitriyev, director of Civil Aviation Plant No 21, and G. Ivanov, secretary of the plant's party organization, Leningrad.

* * *

The editorial "The Quality of Aircraft Maintenance" was analyzed with the leading engineering and technical personnel of the plant at a meeting of the socialist competition staff and on the plant's quality day. A broad discussion of the article was held at special workers meetings in the labor collectives. Ways of improving working conditions in production were outlined, and an additional combination of measures aimed at further improving the quality of aircraft maintenance was worked out. [Signed] A. Kudrin, director of Civil Aviation Plant No 410, Kiev.

* * *

After the plant management's study of the editorial, a plan of measures was drafted and approved in which steps were incorporated to improve the system of production quality control, to increase the role and responsibility of the plant's technical services in ensuring quality in the maintenance (manufacture) of output, and to reinforce quality control by the plant management and the technical control department. A systematic (weekly) review of production quality matters with the plant management and operational measures to reveal deviations in product quality have been introduced. [Signed] V. Tereshkin, director of Civil Aviation Plant No 31, Shchelkovo.

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CIVIL AVIATION

NEW FLIGHT SIMULATORS AT VNUKOVO PERMIT LESS IN-FLIGHT TRAINING

Moscow VOZDUSHNYY TRANSPORT in Russian 15 Jan 85 p 3

[Reports by correspondents M. Blinov and V. Gurdzhiyants: "By Electric Propulsion"]

[Text] Today the nonprofessional can experience the sensations felt by a pilot when he makes a flight in a heavy passenger airliner. He needs only to sit in the right seat of a modern simulator and fly around the customary pattern with an instructor.

When he taxis out for takeoff he will become aware of the characteristic shaking on the concrete slab seams and he will notice the continuous and broken marking lines running past under the aircraft. Through the cockpit windows he will see the runway and its outline lights under him, the safety strips at the side, and in the light haze the airport structures and the distant horizon with hills, forests, or the stacks of the plants.

And on landing, when the panorama of the area near the airport unfolds before his eyes, the approach lights and then the landing lights spread over the windshield, and the noise of the engines and the slipstream begin decreasing in intensity, he will become aware of the rapid approach to a bright, endless rectangle, ruled into squares, the runway. And he will feel a light movement of the yoke, after which the approach to "land" will slow down, and after a couple of seconds, the soft touching of the wheels and the noise when reverse thrust is applied to the engines.

Of course, this "smooth" demonstration flight will not reveal all the capabilities of the new simulator, but it will demonstrate its principal advantage--a three-dimensional reproduction of the "ground."

But what do the professionals think?

"The new simulator, with an optical collimation device and several ranges of option, has provided the opportunity to reproduce a flight which is very close to reality," says Ye. Zhukov, senior engineer of the simulator complex at Vnu-kovo Airport. "In it an instructor can introduce rough air, a preset visibility on the runway for takeoff and landing, and allow one 'leg' of the landing gear not to be extended, providing an opportunity for the crew to land with

this malfunction. Complex optical, sound control and load simulation devices will transmit all the characteristics of an aircraft's performance. The pilot will have to hold back the aircraft in a straight-line runout immediately after touchdown, then it will 'fall' on a wing and the sound of metal scraping on concrete will be heard."

The imitation of depth in vision of the ground and surrounding objects makes it possible to provide training for crews in landing in dense fog and to master actions under particular flying conditions, bringing them as close as possible to real conditions.

A. Timofeyev, deputy chief of the Flight Service Administration of the Ministry of Civil Aviation, states:

"Modern air transport has high reliability. It is created by automation of the most complex processes of control, multiple backups (duplication) of vitally important systems, and by the precise calculation and high performance of power units. Aircraft have become more complex and require high-quality maintenance and high-performance operation. After all, precisely when there is interaction between a person and an aircraft, erroneous and untimely actions, which arise because of the inadequate training of a specialist or his physical or emotional condition and lead to undesirable deviations in flight, are possible."

And modern simulators help us a great deal to foresee and prevent these occurrences when flight crews are trained, when they become familiar with new aircraft.

Two years ago we began reviewing the programs for training cockpit personnel with the aim of reducing the number of flying hours by transferring them to simulators. Without impairing the quality of training for crews, of course. Introduction of these measures is making it possible to economize 312 tons of fuel every quarter. Guided by this experience and by obtaining more improved simulators, we are developing new programs. In the Vnukovo subunit of Tu-154 aircraft, utilization of simulators is already saving over 1,400 tons annually. The opportunities now have been calculated for the Il-62 simulator, the use of which will save about 670 tons of fuel.

Along with these obvious advantages, perfecting the actions of crew members in particular flight conditions, even such practically improbable cases as the failure of several engines at the same time or loss of control, not only increases professional skill, but also trains pilots to have a unique psychological stability and confidence in their own abilities and the capabilities of the aircraft...

The Vnukovo simulator complex holds a leading position in the simulator training of the sector's production enterprises. Not only because it is among the first to have innovations, but also thanks to the extensive efficiency work by engineering personnel.

Probably only the Vnukovo instructors are able to determine by special signal panels on their simulators who is flying at a given moment--the commander or the copilot. A device which takes readings of the force on the controls reports on this.

A data display mounted on the instrument panel will show the sequence of actions by crew members in putting out a "fire" and coping with the failures of one system or another which have been introduced by the instructor.

The new simulators are the first representatives of that fantastic group of miracle machines which in time will take on a greater proportion of the expenditures in the professional training of cockpit personnel. And of course, it is necessary to accelerate the emergence of these advanced electronic "airplanes" which "fly" by electric propulsion.

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CIVIL AVIATION

NEW RUNWAY ENABLES IL-76 FLIGHTS TO TENKELI IN FAR NORTH

Moscow VOZDUSHNYY TRANSPORT in Russian 8 Jan 85 p 1

[Report from the Yakut ASSR by VOZDUSHNYY TRANSPORT correspondent O. Borodin:
"Tenkeli: An Arctic Airport"]

[Excerpts] An Il-76 has landed at the Tenkeli airport. For the first time the landing gear of this heavy aircraft touched down on the new runway in the Arctic settlement, and off-duty miners, representatives of the Deputatskiy Ore Concentration Combine, and rayon administrators gathered to meet it at the airport. Schoolchildren displayed a poster: "You're giving us an air bridge from Tenkeli to Moscow."

It is still far from a direct link between the settlement, lost in the snows between the Yana and Indigirka rivers, and Moscow, but with construction of the new runway, carried out by the Tenkeli mine and the ore concentration combine, such a bridge may become a reality in the years to come. This region is being developed rapidly, and the airport is situated essentially in the center of an economic region which the geologists are earmarking for a great future.

Incidentally, Tenkeli itself is situated in a unique Arctic oasis. The tundra begins 40 kilometers north of it, but even poplars are growing here, and a grove of these trees has become the subject of concern and special pride for Tenkeli residents.

"The principal task for today is the commissioning of the concentration combine which is under construction," says V. D'yakonov, chief engineer of the Deputatskiy GOK [Ore Concentration Combine]. "Metal extraction will be significantly increased when it is put into operation. The construction workers have pledged to turn it over a year earlier than the period planned. But fulfillment of this task is complicated by the lack of a reliable, year-round transportation system. Under these conditions, all hope rests with the assistance of aircraft. We have concluded an agreement for work competition with our Yenisey colleagues. We should also obtain panels for our construction project from Norilsk. In addition, they are shipping 3,000 tons of metal structures from Irkutsk Oblast, and equipment for the mill from other places. And of course, we won't obtain all this without the Il-76."

The large volume of shipments being carried by crews of the Yakutsk Aviation Enterprise in An-12 aircraft is clearly insufficient for the ever-increasing rate of construction at the combine. This is why we speeded up construction of the new runway at Tenkeli, and we are very grateful to the Yakutsk enterprise and the Batagay Aviation Enterprise for the work which they carried out to equip the airport with landing and communications facilities, and they sent experienced air traffic controllers and other specialists in the ground services here...

"The flight from Norilsk to Tenkeli took 2 hours and 40 minutes," V. Shmakov, commander of the Krasnoyarsk Aviation Enterprise, says, sharing his impressions. "Thus, for the first time an air bridge 2,020 kilometers long has been established between these points. We didn't arrive with an empty airplane; we brought the first batch of panels for the Deputatskiy GOK. Right after landing we shared impressions with the aircraft commander on the quality of the runway. Our general opinion is that it is of excellent quality."

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CIVIL AVIATION

BRIEFS

'SOKOL' MULTI-PURPOSE POLISH HELICOPTER--UkSSR--The "Sokol," a helicopter manufactured in Poland, has arrived for operational tests in the northern and southern parts of our country; it was brought by a crew headed by pilot Zbigniew Dombiski. The "Sokol" is a general-purpose aircraft. It can carry up to 12 passengers with baggage (entry into the cabin is from both sides of the fuselage). In the transport version, it will carry cargo (an electric lifting winch is installed over the door, and it has an external sling for large-sized cargo); the flight range of this version may be increased by installation of an additional fuel tank. The helicopter also will be able to carry patients; a place has been provided for medical equipment and medical personnel. Finally, the new helicopter has one more version, for training. [By Ya. Pasternak] [Text] [Moscow NEDELYA in Russian No 52, 24-30 Dec 84 p 4] 8936

TASHKENT-LENINGRAD IL-86 SERVICE--Tashkent--Aeroflot has given Tashkent residents a good New Year present. Wide-bodied Il-86 aircraft have been flying on routes linking the capital of Uzbekistan with Moscow, as well as with Mineralnyye Vody and Simferopol, for a long time now. Now one more route has been added to the existing ones: Tashkent to Leningrad. On the first evening of the new year, an Il-86 departed Tashkent, accommodating everyone who wanted to fly to the city on the Neva. And in a short time it landed at Pulkovo Airport. The privilege of making the first flight, henceforth scheduled flight No 5059, was entrusted to the leading crew of the Tashkent Aviation Enterprise headed by Pilot First Class K. Pak. [By VOZDUSHNYY TRANSPORT stringer K. Yur'yev] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 8 Jan 85 p 3] 8936

AN-28'S TO KOLA PENINSULA--Murmansk Oblast--The Murmansk Aviation Enterprise will receive the first new An-28 aircraft for service on local air routes of the Kola Peninsula in 1985. Extensive operations to build and renovate the takeoff and landing areas of airports in Kola Peninsula settlements have been completed. Northern residents already are accustomed to regular flights to remote settlements. The settlement of Kanevka on the Ponoy [misprinted as "Popoy"] River and the airport in Lovozero are prepared to receive the new An-28's. Renovation of the airport in the village of Krasnoshchel'ye is now being carried out. The labor success of the DSU-1 [roadbuilding administration 1] collective is not accidental. Many advanced forms of labor organization have been introduced here this year. Introduction of a multiple-skill brigade contract also has contributed to the achievement of high production indicators. [By economist I. Smuraga] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 10 Jan 85 p 2] 8936

LENINGRAD-NOVOSIBIRSK IL-86 SERVICE--The area served by Il-86 flights is being expanded. Flying a distance of 3,320 kilometers, aircraft commander V. Grakhovskiy and his crew took passengers from the banks of the Neva to Novosibirsk. This flight will be made four times weekly, and it will be extended to five times weekly during the summer season. With the coming of spring and summer, the Il-86 will make its appearance on the Leningrad-Sochi and Leningrad-Kiev routes. [By VOZDUSHNYY TRANSPORT correspondent T. Nikitina] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 10 Jan 85 p 3] 8936

ADDITIONAL SERVICE TO TYUMEN--The entire country is opening up the Tyumen north. Representatives of practically all the republics in our motherland may be encountered on the routes of the gas pipelines under construction and in drilling and geological crews. This is why the area served by air routes linking the Tyumen region with dozens of cities in the USSR is so extensive. On the eve of the new year, one more air bridge has been added to the long list: Novyy Urengoy to Tyumen to Donetsk. The flight was introduced in response to many requests from the oblast's workers. And pilots of the 2nd Tyumen Aviation Enterprise will make the flight in a Tu-134 twice weekly. [By VOZDUSHNYY TRANSPORT correspondent A. Mokrousov] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 15 Jan 85 p 3] 8936

AN-28 TO TAJIKISTAN--As already reported, preparation is under way in the Tajik Civil Aviation Administration to receive the comfortable new An-28 turboprop airliner, which accommodates 17 passengers. After operational tests are conducted under conditions in the high mountains and a hot climate, this aircraft with two 1,000-horsepower engines will fully replace the An-2, which has served us well, on local air routes. The first group of the administration's best aviators, which will soon leave for Kiev for retraining in the new aircraft, has been assigned. The group consists of B. Sazonov, Honored Pilot of the USSR and senior inspectorate check pilot; V. Parfenov, check pilot of the flight navigation department of the Tajik Civil Aviation Administration; Kh. Ul'masov, Tu-134 aircraft commander of the Dushanbe Aviation Enterprise; and V. Bondarev, An-24 aircraft commander of the Leninabad Aviation Enterprise. [By A. Pavlov] [Text] [Dushanbe KOMMUNIST TADZHIKISTANA in Russian 5 Dec 84 p 2] 8936

NEW BAKU AIRPORT--Baku, 13 [Jan]--Construction of a new airport has begun in the capital of Azerbaijan. The complex, developed by the "Aeroprojekt" [State Planning and Surveying and Scientific Research Institute], meets all the requirements set forth for modern airports. Express flights will taxi right up to the terminals building. Buses will therefore not be necessary to take passengers from the terminal apron to the aircraft ramps. All services are located in the main multistory building. Electronic panels, information centers, automatic machines and telescoping ramps, and rest, communications, personal services and eating facilities will provide a high level of service. The new airport will be able to accommodate all airliners--the Yak-42, the Tu-154 and the Il-86. [By PRAVDA correspondent L. Tairov] [Text] [Moscow PRAVDA in Russian 14 Jan 85 p 1] 8936

TU-154 MAGADAN-PEVEK SERVICE--Magadan--Tu-154's have begun regular flights on the Magadan-Pevik route. The new aircraft has replaced the Il-18 on this route. For 16 years these workhorses of the sky have been widely recognized by residents of the North. More than 3 million passengers and over 45,000 tons of various types of cargo have been carried by this type of aircraft. And this is the final flight. [By V. Chukov] [Text] [Moscow PRAVDA in Russian 15 Jan 85 p 1] 8936

IL-86 MOSCOW TO ALMA-ATA--Alma-Ata (TASS)--A new route has been opened by the Soviet airbus, the Il-86. The first flight was made today from Moscow to Alma-Ata by the crew headed by Ye. Abdramanov, pilot-engineer first class of the Kazakh Civil Aviation Administration. The airliner will relieve one of the country's most heavily traveled air routes, Alma-Ata to Moscow, and will speed up delivery of mail and urgent cargo significantly. [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 19 Jan 85 p 3] 8936

NEW RUNWAY AT CHUMIKAN--The airport of the rayon center of Chumikan, in the northern part of Khabarovsk Kray, has passed a difficult test for a commission of the Far East Civil Aviation Administration. A new runway has been put into operation here. Renovation of the airport will make it possible to avoid continuous scheduling of a dirt strip in the spring and autumn bad-road seasons, as in the past. So the regularity of flights on local air routes will be increased to this airport, located on the shore of the unpredictable Sea of Okhotsk. It should be noted that the concern of party, soviet and economic organs in Tuguro-Chumikanskiy Rayon helped to complete the large amount of work involved in bringing gravel and in compacting the runway. The "Primorzoloto" Association released people and construction equipment for the project, and persons sent by other enterprises and organizations in the rayon worked here. This has helped the aviators to begin using the new runway in the year that has just begun. Extension of the Chumikan runway is envisaged for the future. [By VOZDUSHNYY TRANSPORT correspondent S. Glukhov] [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 22 Jan 85 p 2] 8936

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MOTOR VEHICLES AND HIGHWAYS

MAJOR IMPROVEMENTS PLANNED FOR VARIOUS GAZ PLANTS

Moscow IZVESTIYA in Russian 25 Oct 84 p 2

[Article by N. Pugin, Gorkiy Motor Vehicle Works general director, USSR Supreme Soviet delegate: "GAZ--The Second Birth"]

[Text] The famous Gorkiy Automotive Works collective has made an enormous contribution to the development of our domestic motor-vehicle construction industry, which is celebrating its 60th anniversary. Originated during the First Soviet Five-Year Plan, this giant of the automotive industry, located on the banks of the Volga, became a real outpost of socialist industry. Their well-known 1½-ton truck duly served the national economy in the pre-war years, as well as during the hard war years. Today, cars with the "GAZ" emblem are widely known, especially in rural areas, where they are primarily used. The labor and creative mindset of the Gorkiy motor vehicle builders is evident in vehicle models produced at the ZIL Works in Minsk, in Kremenchug, in the economy cars built in Togliatti, and in the trucks from the Kama River Works.

Gorkiy is the place where, for each of the domestic motor vehicle works in its turn, personnel were trained, production processes were developed, or vehicle assemblies were turned out. And this help has continued up to the present time. GAZ Association collective members numbering in the thousands are presently occupied in resolving a new complex task, connected with carrying out the Food Program. The task concerns the changeover to producing heavy-duty diesel tractor-trailer rigs of 9-ton carrying capacity.

Just such a tractor-trailer rig, the GAZ-6008, has already been developed through the joint efforts of collectives of the Saransk Dump Truck Works the Balashovskiy Trailer Design Office, the Yaroslavskiy Fuel Equipment Plant, and a number of sectoral and union scientific research institutes. Designs for the trailer truck part of the truck and trailer unit have been implemented according to the technical requirements set forth by Minsel'khoz [Ministry of Agriculture] and Goskomsel'khoztekhnika [State Agricultural Equipment Committee] primarily to enhance its cross-country capability, which is critically important for rural conditions.

When these trucks are joined together with grain- and silage-harvesting com-

bines, they can move through the field at a speed of 2-3 km/hour. It is important that the trailer trucks are equipped with beds which dump from three sides, which reduces labor outlays for unloading. The vehicle's six-cylinder air-cooled diesel engine saves fuel, and this reduces the amount of harmful toxic gases released into the atmosphere. In addition, this new diesel is more adaptable to various climatic zones--from the Polar Regions to the torrid conditions of Central Asia. According to the calculations of economists, use of these new trailer trucks will effect annual savings of up to 370,000 tons of fuel, and would reduce the number of drivers required by 2-fold. The economic effect of a single tractor-trailer train is over three thousand rubles per year. In short, these new trucks will be a great help in converting the agricultural economy over to the high-speed track. The new orientation in this direction came to all of us from the recently concluded October 1984 CPSU Central Committee Plenum.

At present there has been developed a radical reconstruction of the main enterprise--the motor vehicle plant and our affiliates, which are located not only in the Gorkiy Oblast, but also in other republics. The situation is complicated by the fact that the reconstruction has to be carried out under actual operating conditions, which means "real life" conditions. In this connection, no reduction in output levels can be tolerated. By the way, this will be the largest modernization in the entire history of the motor vehicle plant: a span of over half a century. We will be bringing in diesel power assembly structures, crane structures, cardan shaft housings, non-ferrous casting housings, and hot-stamping assemblies. The state has allocated a lot of funds for this operation. But the estimates show that we will need five times the estimated amount to erect a new plant.

I should mention that we plan to use our own works department for about 40 percent of the operations connected with the reconstruction. With this purpose in mind, the materials storage center for our Gazremstroymontazh [Gorkiy Motor Vehicle Plant Repair, Construction and Installation] Trust is being consolidated. And this has an effect on affairs. Thus, today the trust is handling work in amounts exceeding about a million rubles. But the scope of the reconstruction project is putting new demands on our prime contractor, the Avtozavodstroy [Motor Vehicle Works Construction] Trust. It appears that in the near future this trust is going to have to increase work volume at our projects to 32-33 million rubles per year, in order to get the new capacities for manufacturing diesel tractor trailer rigs in operation on time.

The inadequate rates at which the reconstruction of the Tsentrolit [not further expanded] Plant in Saransk are disturbing people. Here, we are awaiting help from USSR Minavtoprom [Ministry of the Automotive Industry].

Manufacture of the new diesel tractor trailer rigs will start up with no considerable increase in the number of workers. Consequently, we are adamantly set on utilizing the most advanced and state-of-the-art manufacturing techniques, and the integration and mechanization of production. Automated manipulators and industrial robots, lathes with ChPU [numerical programmed control]

and processing centers are being introduced for this purpose. Adaptable automated procedures are being set up, and microprocessor control systems for production equipment as well as for production.

In due time a difficult situation came about in the metallurgical production foundry shops. Right away, help was sent there from the engineering and other trouble-shooting sections of the plant, including the in house machine tool section. The result was the setting up of a compact molding line. This permitted the technical re-equipping of the foundry shops to be carried out with no lag or reduction in production volumes. Six of these lines have already been put into operation here, and several high-production continuously operating shot-blasting cylinders and other equipment, all of which has freed over 700 people from heavy manual labor. In connection with this, the quality of castings has been improved, which in turn has had a positive effect on the machine shops' work. The working up of designs for line junctions has been carried out simultaneously with their manufacture, and thereafter with their installation and start-up into continuous production schedules. All this has brought about considerable gains in time, for implementation of new production equipment.

But there is still a lot to be done. Consequently, we are broadening the degree to which we will collaborate with the country's leading scientific research organizations for the combined mechanization and automation of production. The more so, since a single collective, even the most powerful, can't always do it all. It appears that the time has come to change over from the many dozens of automatic manipulators and industrial robots which are manufactured in the USSR and CEMA [Council for Mutual Economic Assistance] countries, to series production of modular design versions. As we see it, the lathe control centers equipped with numerical programmed control must be united with the processing centers.

In the plant, a new department is being set up for processing 690 tons of polyurethane and 1,400 tons of thermoplastics. This will effect a yearly saving of up to 10,000 tons of metal. An additional 200 workers will be made available in the shops. Unfortunately, USSR Minkhimprom [Ministry of the Chemical Industry] enterprises have not yet been provided with modified polyphenylene-oxide and plastic.

The widespread reconstruction which is being carried out at present at GAZ, and which is connected with the conversion to manufacturing diesel tractor trailer rigs for use in rural areas, has become a critical affair for the entire collective today. The shops have initiated socialist competition to fulfill this year's plan and the five-year plan assignments ahead of schedule. And preference surrenders to the intense economic factors in the development of production. Thus, nowadays, labor productivity has risen above the plan by two percent in 9 months, and the production cost for output has been reduced by 0.5 percent. During this time period, hundreds of trucks were manufactured in addition to the assignment. Spare parts are being delivered ahead of schedule to rural areas. Over 10,000 motor vehicle workers have reported ahead-of-schedule fulfillment of their five-year plans.

Next year the country celebrates the 50th anniversary since the founding of the Stakhanovite Movement. This date has special significance for the motor vehicle builders of Gorkiy. As we all know, on 11 September 1935, our tool-smith, Hero of Socialist Labor A. Busygin set a record for forging crankshafts and became the initiator of the Stakhanovite Movement in machine manufacturing. In the enterprise, the honorary prize imeni A. Busygin has been instituted. This prize is being awarded to a collective of a leading brigade of forge-shop workers according to the totals for the year.

The members of the association's collective are carrying on the older generations' competition with honor, and are striving today to create all the necessary conditions for the successful manufacture of diesel tractor-trailers. This will permit the Gorkiy Motor Vehicle Works workers to make an enormous contribution to making the Food Program a success.

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MOTOR VEHICLES AND HIGHWAYS

ZIL ENGINE PRODUCTION LINES MODERNIZED, AUTOMATED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 22 Nov 84 p 1

[Article by V. Shvorina: "New Life for the Lines"]

[Text] Moscow--The ZIL engine shop, one of the largest production departments of this giant plant, greeted us with a typical work din. However, the events occurring here are not at all normal, and are important, not only for the enterprise itself, but for the country's entire national economy: the old equipment, which has been working for 20 years, is getting a new lease on life.

Slowly, smoothly, the conveyor belts move along, carrying motor vehicle components from operation to operation. One moment a heavy block of metal suddenly changes position and is grasped in a clamp. The next moment, the drill bits sink their "teeth" into the solidity of the metal. After several minutes, freed from the steel embrace, the block glides on. But there are no people anywhere near. In general, the shop is very sparsely populated. Deputy Chief Engineer of the AvtoZIL Association [an association headed by the Moscow Motor Vehicle Works imeni Likhachev] N. Borodin explains:

"Almost all the operations concerned with the mechanical treatment of the cylinder block and other related components have been carried out in the shop for quite a while by automated lines. They have served the plant well, but in the last few years, have caused a lot of trouble. They've grown old and tired out. They break down more and more often, and are idle for long periods of time. We've been needing to do something to bring the old operating and assembly lines into a new rhythm, so they could handle the tasks required of them these days.

The thing is, all these lines which have been installed not only at ZIL but at the country's other motor vehicle plants, operate using a contact-relay control system. They fail to provide high operational reliability in mass production conditions. According to an analysis conducted by NIITavtoprom [Scientific Research Institute for Automobile Industry Technology] specialists at ZIL, KamAZ [Kama Motor Vehicle Works] and other of the industry's leading enterprises, they have an incidence of malfunction exceeding 30 percent. Electronic control systems are devoid of the faults of the contact-relay control systems.

So, for the first time in our country, efforts have been initiated at ZIL to convert the lines, both domestic and foreign, which have been in operation for up to 20 years, over to electronic control.

"Initially we modernized several of the operating lines in the engine shop," continues Nikolay Fedorovich Borodin. "To replace the contact-relay systems, we installed programmable control units and we manufactured power automatics. These efforts were carried out with no lag in production, during holidays and days off."

The lines which have been given a new lease on life have proved their worth in fine fashion. The result is obvious: the use of programmable control units has brought about over a 7-fold reduction in the number of breakdowns in the control systems, has sharply increased the productivity of the equipment, has made the work of the maintenance personnel considerably easier, and has freed a number of workers. Volumes of electric wiring work have been reduced by a third, and the length of time expended for adjustments to the control systems has been cut in half. The yearly economic result effected by modernizing only a single one of ZIL's gas distribution collector processing lines amounts to over R15,000.

Yu. Serdyuk, a trouble-shooter, has worked at ZIL for three years. Initially he serviced the old line. It was rejuvenated last year.

"You can't compare its present condition with the way it was before," says Yuriy. "Now it works efficiently, reliably and without breakdowns. And it's twice as easy on us. The control panel shows very clearly all the information about the line's condition. It used to take many hours to find the cause of the breakdown."

"It's like the difference between night and day," confirms V. Shumskiy, who is the electrician-on-duty on another production line. He has worked at this plant for 20 years. "And, it's easier now, and more interesting. Of course, we had to learn. And now I've completed the special courses."

Ten lines have been modernized at ZIL. True, there are more than 150 pieces of equipment here which needed conversion to electronics. Still, the plant workers are justified in saying that this is no experiment; this is experience. These people have taken the training. As a result, little more than a month has been spent on preparatory work for the entire complex. And the transition itself will take place during two off-days, and won't disturb production in the slightest.

We wish to add that the use of a contactless circuit design as the starting point for programmable controllers makes possible the introduction of another innovation--a diagnostics system. Here, NII Tavtoprom specialists once again came to the assistance of the association. In one of the blocks, joint collaborative efforts are being carried out by scientists and production workers to update the hydraulic crankcase processing line. Here, for the first time in the practice of our domestic automotive construction, sensitive instruments are being installed which are capable of controlling the functions of separate

assemblies and simultaneously sending signals about defective conditions and the reasons for breakdowns in the hydraulic and/or electric equipment.

ZIL's initiative was first taken up at the Yaroslavl Motor Vehicle Works. With the assistance of NIITavtoprom specialists, led by Chief Designer A. Gorst, four automatic lines have already been changed over to electronic control this year.

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MOTOR VEHICLES AND HIGHWAYS

VEHICLE SPARE PARTS SHORTAGES CONTINUE

Moscow ZA RULEM in Russian No 9, Sep 84 p 8

[Article by A. Moiseyevich: "Trade Talk"]

[Text] In last year's August issue of ZA RULEM, this magazine talked about the interrepublican wholesale trade fair of goods for cultural and personal consumption, among which are vehicle appliances and parts. In the article, it was mentioned that in spite of increased production and an expanded inventory of these products, "it is still a long way before the demand for these goods is satisfied". Our conclusion was substantiated completely: following every mention of this or that new technical product in this sector, a multitude of letters would be written to the editorial board, and they all had the same questions: Where can I buy it? Where can I get it? they never heard of such an item in the city's (area's) stores. And these letters are not sent from just remote regions--quite often the return address shows that they come from Moscow, Kiev or other major centers.

At the same time, a number of the trade's workers are bemoaning the fact that conditions in the auto parts market are not so good, and that for a lot of items the danger of an overstock either already exists, or is impending.

We had hoped that attendance at the 1984 trade fair would help, even if only partially, correct the situation. But from the beginning, the number of questions only swelled.

Concerning items for motorists, this year's wholesale trade fair looked, at least outwardly, somewhat poorer than the previous one. And this is what put us on the alert. Production of these goods is increasing, and more and more new enterprises from various sectors are constantly becoming involved in auto-parts production, but the assortment of products on display is diminishing.

Briefly, here is the way matters stand. Each region of the country has a recreational goods center. Not only does it provide local stores with goods, but looks after the sale of products from the enterprises located in its area. Naturally, if there are items in this output which are in high demand, it never occurs to the center to display them at the trade fair, since their sale is guaranteed in the two-way contacts with every other center, and what's more, you also get interesting goods in exchange. And if the

production run is small, then it simply isn't worth it to have to make shipments to some place out in the sticks--it's too much bother. That's how, on the one hand, the mixed-up character and non-uniformity in distribution of the goods needed by motorists arises (both where they are thick, and where they are sparse), and on the other hand there is an abundance of long-familiar, unmarketable items on the trade fair displays. Often these "twins" are manufactured simultaneously by several enterprises. An example, as it is called, lies right on the surface: stamped decorative wheel covers in a number of styles, about which much has already been written and said. Though they were considered "sharp items" some time back, now they have become a sign of bad taste. So few of them are sold, naturally, but a lot of them are produced. So what's going on here?

Many people explain it like this: the goods move somehow, but with new items, you're taking a risk that the consumer won't like them at all. There's some truth in that. Selection must be made on the basis of correct judgement, and that based on the recommendations of specialists who well know the special features of motor vehicle equipment operation, and the needs of motorists. In due course, an organization was set up for the purpose of studying these problems--a specialized branch of NAMI [Central Order of Labor Red Banner Scientific Research Motor Vehicle and Vehicle Engine Institute], which is the main motor vehicle industry institute. Information about similar situations abroad is available from Soyuzpromvnedreniya [possibly All-Union Industrial Implementation] Association, which is part of the Ministry of Foreign Trade. What's preventing us from using their services? There are a great many enterprises which are familiarizing themselves with production of motor vehicle parts. These enterprises are found in all parts of the country, are subordinate to various departments, and it is far from ubiquitously surmised that they will initiate their developments with a visitation from the above-mentioned institutions. They rely on themselves, on the taste of the local workers in the trade, or they simply decide to take advantage of the success enjoyed by items which have already been produced. They come to the NAMI branch office anyway, but already at the stage of approval of the specifications, and the visit frequently ends in disappointment. But in general, they don't make these visits. Many items are manufactured according to specifications approved in the republic or in their ministry. All these are ways by which low-demand auto parts of little practical use (or the numerous "doubles" which are deposited on store shelves) can come into being.

But there are other cases. For example, in Tallinn and in the Transcarpathian region, they have produced electronic voltage indicators. They were discussed in ZA RULEM, No 11, in 1983, and immediately people sent letters to the editorial board asking where these instruments could be bought. But in truth, they couldn't be bought anywhere. The trade workers didn't want to take them from the manufacturers. They simply explain it this way: "We are not specialists, and the concept of this instrument is vague to us, so who knows if they will sell or not? It's better not to take the risk." The usual set-up in such cases reminds one of a vicious circle: a plant develops production of a useful, though fundamentally new device, and the trade organizations don't accept it, and base their refusal on absence of demand for the product, and the mass

of potential purchasers has no inkling that the device exists. By the way, the trade workers' position is easy to understand. They really aren't specialists in motor vehicle technology, and their main concern is the turnover of goods.

And here, we would like to discuss the initiative manifested by "Avtomobil", a store in Moscow, on Yuzhnoportovaya Street. In April, on the threshold of the summer season, a two-week exhibit and sale of automobile parts and accessories was held there. In order to bring this about, the store employees made direct contact (in plenty of time for the sale) with a large number of manufacturers, coordinated their plan for joint action with them, and notified car-lovers about the plans which they were preparing through wide press coverage. By the beginning of the exhibit and sale, the entire products list of items, which usually show up at different times, had been delivered. But it is perhaps even more important that representatives of the plant-suppliers were in the trade hall for the entire two weeks: they gave consultations about their products, demonstrated their operation, heard out the motorists' opinions and demonstrated experimental models of products being prepared for manufacture. The efforts put forth by the organizers of the show and sale produced excellent results: the turnover of goods increased almost 4-fold against the usual level. And this is not taking into consideration the customers' mental satisfaction or the useful information collected by the manufacturers.

We are intentionally refraining here from going into a concrete analysis of today's motor vehicle parts and accessories products list: prospective products, what has outlived its usefulness and what is required by the motorists. That is a separate theme. But here, having returned to the initial point of our talk, we would like to make an attempt at formulating some suggestions for the elimination of disorders which exist in the sale of auto parts and accessories: customer dissatisfaction, the cautious attitudes on the part of trade specialists, and manufacturing enterprise difficulties.

It is striking, that for all the enumerated links--for each on its level--there is first of all, insufficient qualified information. It seems to us that much use could be derived by issuing a special yearly information bulletin (with the participation of the NAMI branch, NIIavtopriborov [Scientific Research Motor Vehicle Instrument Institute], NIIPreobrazovateley [Scientific Research Converter Institute], and a number of other organizations and leaders in individual groups of products), which should be circulated first of all to all Sporttorg wholesale centers. Accordingly, an enterprise wishing to start up production of one or the other type of motor vehicle part or accessory could turn to the local center and obtain there the necessary primary information about market conditions, as well as the product's technical nature. In their turn, the trade workers would have recommendations on the technical level, the consumer value and the "geography" of manufactured output, thereby increasing their competence when making wholesale purchases of products. Information and coordination are necessary if we want to raise the KPD [efficiency] of all links in the path of the product to the consumer.

We believe that the practice of conducting exhibition-sales of motor vehicle parts and accessories in large motor vehicle concerns deserves wide dissemination. Here, the customer is the most important factor. On its part, the magazine ZA RULEM constantly strives to supply readers with needed information.

Concluding our conversation, we would like to touch upon a question which is closely associated with the production of motor vehicle accessories. On the whole, much energy has been directed toward production of these accessories. And the trend is upward. It probably makes sense to direct some of this energy, as appropriate, into production of scarce spare parts for vehicles as consumer goods and not into production of optional, peripheral auto accessories. We think the Ministry of the Automotive Industry should take the lead in setting up favorable conditions for enterprises in other spheres. We believe that such an industrial policy would be effective in eliminating shortages, and in some cases it is the only solution. We hope that the competent Minavtoprom [USSR Ministry of the Automotive Industry] specialists will speak out in regard to this problem.

And in conclusion. Right now, more than ten million Soviet families own personal automobiles. And it is natural that they, one way or the other, are interested in goods which are connected with the operation of their cars, their equipment, and safe travel. It seems that the army of our motorists have the right to count on a lot of help from business organizations, and on the fact that USSR Mintorg [USSR Ministry of Trade] will find ways to expand the variety of automotive products, and to satisfy the demand for them.

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MOTOR VEHICLES AND HIGHWAYS

WAYS TO LESSEN MOTOR VEHICLE SPARE PARTS SHORTAGES

Moscow AVTOMOBIL'NAYA PROMYSHLENNOST' in Russian No 11, Nov 84 pp 1-2

[Article by candidates of technical sciences Ye. P. Blyudov and I. K. Del'tsov, NAMI [Central Motor Vehicle and Engine Scientific Research Institute]: "Some Ways of Supplying Motor Vehicles with Spare Parts"]

[Text] To satisfy the demands of the national economy, Minavtoprom [USSR Ministry of the Automotive Industry] enterprises are conducting systematic work on increasing the production of vehicles, increasing their carrying capacity, power to weight ratio, reliability and longevity, reducing the labor intensiveness of maintenance and repairs, and raising spare parts production capabilities.

Thus, a complex of design and technological measures alone, instituted in the 10th Five-Year Plan, permitted a 1.3 to 1.5-fold increase in normative kilometers logged before overhauls of the vehicles and their primary assemblies. Measures to further increase the life of the goods produced are being carried out successfully in the 11th Five-Year Plan as well. As far as spare parts production, in 1985 it will be (in terms of the mechanical range of parts and assemblies) approximately 25 percent more than in 1980. Much has been done and is being done to improve the operation and repair of motor vehicles and to raise the quality of operating materials. For example, a competition has been started up at motor vehicle transport enterprises for increasing the normative kilometers logged before overhaul and for the economical consumption of spare parts; in the course of this competition, drivers from RSFSR Minavtotrans, Glavmosavtotrans, and other authorities have achieved truck runs of up to 350,000 kilometers without an overhaul, having secured a 10-15 percent savings in spare parts as opposed to the existing norms. However, the problem of satisfying the demand for motor vehicle spare parts remains acute, requiring the quickest possible search for ways to solve it. And this much is clear: the way that was long considered practically the only one possible--increasing the scale of spare parts production--turned out, as special studies and domestic and foreign experience have proven, to be economically unjustified and virtually unrealizable. Another one manifested itself: this important national economic problem requires the application of cardinal measures directed, first of all, toward rational utilization of the spare parts being produced and toward a significant reduction in their consumption in operation and in repairs. No less important is increasing the quality of overhauls, increasing the volume of worn out spare parts rebuilt, and improving the system for supplying spare parts. Therefore, these trends are now becoming the primary ones.

Thus, in 1978-80 branch plants, jointly with the Central Motor Vehicle and Engine Scientific Research Institute and participating interested organizations, (Goskomsel'khovtekhnik, Soyuzglavavtosel'mash, RSFSR Minavtotrans, and others), conducted specific work on revision of the norms for the consumption of spare parts, which were approved and put into operation in the established order starting 1 Jan 82. As a result, the standard demand for spare parts was reduced by 130-140 million rubles per year. The consumption of metal for spare parts was also reduced. For example, if up to 1970 the total consumption of metal for their manufacture comprised more than 40 percent of the metal allotted to the branch for the production of motor vehicles and spare parts for them, then in 1975 it already comprised about 30 percent, and in 1980, 25 percent. In the 11th Five-Year Plan, the life of the vehicles produced is scheduled to be increased by an average of 15 percent, which will allow the specific average annual consumption of spare parts to be reduced by not less than 5 percent.

For 1981-1985 and the period up to 1990 the resolutions of the 26th CPSU Congress stipulate substantial improvement in the standardization of all production resources, systematic revision of obsolete standards and introduction of progressive ones that correspond to the modern level of technology, equipment, and labor and production organization, and also the reinforcement of work on economics and the rational utilization of raw materials, fuel-energy and other material resources.

In connection with this branch plants are developing consumption norms for potential vehicle models, slated for production in this five-year plan, and technically based proposals for the revision of current norms that facilitate a reduction in the specific average annual consumption of spare parts. In particular, tasks have been stipulated by Minavtoprom that establish, beginning in 1984, requirements for the development of new vehicle models toward guaranteeing the operation of frames, cabs, and bodies without overhaul and the operation of basic parts without replacement for the planned life before they are to be written off, and the operation of basic assemblies without repairs until the first overhaul. In conducting range and service tests of vehicles for verification of their life, a control consumption was established for spare parts according to cost, which should not exceed the set values. Likewise increased were the requirements for maintainability of the goods produced, especially basic and metal-intensive parts for motor vehicles and engines (camshafts and crankshafts, cylinder blocks and sleeves, casings for the transmission and axles, and others). Special repair kits of parts for restoring the serviceability of assemblies in the unit are being introduced into the range of spare parts. Methods and techniques are being perfected, including the rebuilding of worn parts and assemblies.

The latter have huge significance for the national economy, since the consumption of materials for rebuilding parts is dozens of times less than for manufacturing new ones.

Increasing the life of a vehicle up to 350-400,000 kilometers will permit a reduction in the number of overhauls of complete vehicles by means of the removal from the fleet of the maximally worn ones, that is the obsolete ones just like the physically worn out ones. It is advisable to conduct the culling of such vehicles only through motor vehicle repair enterprises, since this will allow the more complete utilization of the residual life of parts and assemblies.

In the revision of the Regulations for Maintenance and Repair of the Rolling Stock of Motor Vehicle Transport Enterprises, it is stipulated that the number of overhauls be maximally limited by replacing the units and assemblies overhauled at repair plants.

Further improvement of the system for supplying consumers with spare parts should be considered a most important trend in the work of branch enterprises, in the first place of ZAZ [Zaporozhye Motor Vehicle Works] and VAZ [Volga Motor Vehicle Works] and Moskvich passenger cars, BelAZ [Belorussian Motor Vehicle Works] quarry dumptrucks, KamAZ [Kama Motor Vehicle Works] trucks and engines, since the production associations that produce these vehicles are responsible for the functions of developing production plans for spare parts, and for the distribution and sale of them. They should be involved in the development and institution of repair technology for primary and base parts as well. Such experience already exists. For example, the experience of the Yaroslav motor works, which not only developed and instituted the technology for rebuilding the crankshafts and connecting rods in the YaMZ-240 engine, but is also doing industrial rebuilding of them and introducing the technology at repair plants under Goskomsel'khoshtekhnika and other authorities.

With a view to freeing up production capabilities at enterprises and increasing the production of spare parts for those cars currently in production as well as for those scheduled for production, it is advantageous to curtail the manufacture of a number of unit assemblies, and basic and body parts for models of vehicles that were withdrawn from production more than 10-15 years ago. This problem can be solved for the future by delivering such parts ahead of schedule and storing the back-log, and also by replacing units or assemblies, especially in a set of non-vehicular equipment, with other units and assemblies whose production is still going on at branch plants. A positive result may also be obtained from a review and agreement with the enterprise-manufacturers of non-transport machines (for example, communal machines) of the complete set of goods produced by branch enterprises, since in a number of cases many parts and assemblies, sometimes even frames and cabs, are simply demonstrated at these enterprises. Their use as spare parts should be brought about through supply and marketing organizations.

The realization of the above measures, directed toward further improving the life of the goods produced, increasing their maintainability and the quality of repairs, expanding the range and volume of used part rebuilding, improving the utilization of spare parts in the sphere of operation and repairs, perfecting the system for supplying them to the consumer, developing production capabilities, and increasing the output of the spare parts in short supply, will facilitate the solution of the problem of providing the motor vehicle fleet with spare parts, a reduction in their specific consumption, and a savings of material and labor resources in the national economy of the country.

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MOTOR VEHICLES AND HIGHWAYS

NONAVAILABILITY OF IZh MOTORCYCLE SPARE PARTS

Moscow ZA RULEM in Russian No 9, Sep 84 p 30

[Article, under signature "ZA RULEM Letter Department": "Measures Being Taken to Increase the Spare Parts Supply for Izh Motorcycles"]

[Text] In the mail received by this magazine, the authors of many of the letters are bemoaning the difficulties connected with acquiring spare motorcycle parts. Our readers are extremely agitated about the fact that, because of the chronic scarcity of individual parts, their machines spend months, and even years, standing idle. The state of affairs in regard to meeting these demands is especially unfortunate for owners of Izh motorcycles. When they turn to trade organizations concerning needed spare parts, they are frequently met with refusal. They write to us that the specialty stores have nothing that they need for their IZh motorcycles, and from January to December, the Posyltorg [possibly, Mail Order Trade] centers all have the same reply: "The center cannot possibly fulfill your request, since all the orders for the available amount of goods which you ordered have been totally taken."

When letters about these problems started coming in from readers, we got acquainted with the interested organizations. In the extended answer given by one of the organizations subordinate to the Izhmash [Izhevsk Machinery Construction] Association, it says:

"Increased output of spare motorcycle parts was planned for the 11th Five-Year Plan, and is guaranteed, in accordance with demands from USSR Mintorg [Ministry of Trade], RSFSR Mintorg and Tsentrsoyuz [Central Union of Consumers' Societies], to eliminate the difficulties associated with the acquisition of spare parts. The 1984 plan calls for an increase in the output of spare motorcycle parts of 4.4 percent, including an increase for the items in shortest supply (pistons, rings, crankshafts and cylinders) of up to 23 percent. Measures are being taken to reduce the demand for spare parts. Measures to improve the quality and reliability of IZh motorcycles have been developed and are being carried out by motorcycle and motorcycle engine enterprises and manufacturers. In 1983, the ratchet and pawl mechanism for the outside drum, the acoustic filter for the muffler and the neutral contact assembly were updated. In 1984 the 12-volt generator was improved, a new design for the ignition coil was introduced, and the number of electrical connectors was reduced."

And so, the replies from the USSR and RSFSR Ministries of Trade are, to put it bluntly, disappointing. Having decided that the main reason (for the time being) for the shortage of spare motorcycle parts is the systematic non-meeting of demands from trade organizations by a number of industrial enterprises, the ministries have silently passed over the fact that the solution to the problem also depends to a great extent on how the demand for spare parts is calculated and how the parts are distributed. Nothing has been said about concrete measures for improving the work of mail order firms. We hope that our editorial staff will be kept informed about this at any rate.

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MOTOR VEHICLES AND HIGHWAYS

DETAILS OF NEW SOVIET MINIBIKE

Moscow ZA RULEM in Russian No 9, Sep 84 p 17

[Article by V. Kleynberg, chief of the Sarkana Zvaygzne Sport Motorcycle and Design Bureau: "Our First Mini-Mokik", under the rubric "Soviet Technology"]

[Text] A compact, single-track machine which combines the virtues of the moped and the motor scooter, it is simple and easy to store and what's more, it still looks like a traditional motorcycle. And that's the mini-mokik. It's perfect for short shopping trips around the big city microrayon. Urban community dwellers see it as a means for getting to and from work. The mini-mokik permits both young and old to take refreshing outings out of town, into the woods and to the neighboring countryside. This type of vehicle is being manufactured for the first time in our country. Production of these minibikes was initiated during the first half of this year by the Sarkana Zvaygzne Plant, in Riga.

The "Mini" (or according to its official plant indicator, the RMZ-2.126) is compact and maneuverable. It takes up very little room, and is easily loaded on top of a car, in the trunk of a Volga, in an elevator, on an apartment balcony, or right in the utility room of an apartment house. How is this done?

Like a motor scooter, the mini-mokik has small-diameter wheels. If you release the clamps, the handlebars can swing down, reducing the height of the machine by almost half. A device has been provided which will lower the saddle-seat for the same purpose. All these operations take only a few minutes.

The "Mini" is fairly light, and takes no special effort to place it on its rear-wheel stand in a storeroom, for example, as it weighs only 50 kilograms. The merits of the mini-mokik are not limited to its compact size. The machine is fairly advantageous in its operation. It is a single-seater personal vehicle, with almost two horse-power at its command: the engine is rated at 1.8 horse-power. And the vehicle is extremely economical: the "Mini" will travel 45-47 kilometers on a single liter of A-76 gasoline.

We have become accustomed to the spartan equipment of mopeds. The very first Soviet mini-mokik comes equipped with a headlight with dimmer-switch and European light distribution, cushioned saddle-seat which is adjustable for height,

speedometer, two rear-view mirrors, side-mounted kickstand, light reflectors and a kick starter. These could be called details. But a rich assortment of such details becomes quite a bargain.

And it is really a bargain that the "Mini" is simpler to maintain and repair than many of the other mopeds. For example, to make it easier to change the tires, the wheels are made of two stamped halves, as they are on motor scooters, and are tightened on with three bolts. By the way, these wheels have no spokes, and so have no spoke nipples to be tightened during operation, nor are there any "eights" [vos'verka] to be eliminated, or other cares. The contactless ignition system relieves the owner of having to adjust the points, and the paper air-cleaner element is replaced only every 8,000 kilometers.

The construction of the mini-mokik, even with all its good qualities, has been kept simple. The centered [khrebtovyy] frame is in the form of a central, large-diameter pipe, the rear wheel is rigidly mounted, and the design of the collapsible handlebars is intelligently thought out and uncomplicated. The anti-theft device is just as unassuming, though realized in a practical manner. When the front wheel is turned, the openings in the fork limiter and its cross-member line up, forming a little pocket for an ordinary padlock.

This new machine is painted in bright, fashionable colors: orange, bright green, and red. Individual lots are finished up with white wheel guards and gas tanks which smarten up the looks of the machine.

The retail price of the mini-mokik RMZ-2.126 is 250 rubles.

The "Mini" will, in part, take the place of the production model mokik, compared to which it, while having the same price, possesses new consumers' qualities and a distinctive outward appearance.

The plant is planning to produce 16,000 new machines this year. And in addition, the "Lyuks", a modified version, has been tested. It is equipped with a baggage rack on the front fork and a basket over the rear wheel. In 1985 Sarkana Zvaygzne is slated to start up production of the RMZ-2.130 version of the mini-mokik. It will have a pedal-operated transmission-shifter, rear wheel spring suspension, and a raised muffler.

Specifications

GENERAL DATA. Dry weight--50 kg. Top speed--40 km/hour. Fuel capacity--5.5 liters. Gas Mileage--no more than 2.1 liters/100 km. Dimensions: Length--1,510 mm. Width--in running order 740 mm. Folded up--350 mm. Height with handlebars in operating position--1000 mm. Height with handlebars collapsed--520 mm. Wheelbase--1000 mm. Ground clearance--120 mm. Tire size--3.00-10 inches. ENGINE--Model--V50. Displacement--49.8 cm³. Compression ratio--8. Fuel--



mixture of A-72 or A-76 gasoline with oil at a ratio of 25:1. Capacity: 1.8 horsepower/ 1.32 kw at 4,800 Revolutions Per Minute. TRANSMISSION: Multi-disk clutch. Gear box--two speed, with twist grip control on the handlebars. Power is transmitted to the rear wheel by a chain.

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MOTOR VEHICLES AND HIGHWAYS

BRIEFS

BSSR STUDIES GAS-POWERED VEHICLES--Scientists and practical experts have figured out that if a motor vehicle is operated on gas, then fuel expenses are reduced 2.5-4-fold, outlays for lubricants are reduced by 15-18 percent and the toxicity of spent gases is reduced 1.2-2-fold. In addition, transportation costs for operating gas-cylinder-equipped vehicles are lowered 4.7-9.7 percent, and the operating life of their engines is increased by 30-50 percent. Beginning in 1983, the BSSR Ministry of Automotive Transportation has actively carried out efforts toward converting trucks and cars over to gas operation. And the first results of these efforts have borne excellent fruit. At present in Minsk, for example, there about 500 taxis and trucks operating on either compressed or liquified gas. The conversion of motor vehicles to gas fuel and their operation only in the republic is effecting a saving of over 7,000 tons of gasoline, and dozens of tons of motor oil per year, and the amount of toxic substances released into the atmosphere has been reduced 1.5-2-fold. The BSSR Ministry of Automotive Transportation has developed, and is carrying out a long-term plan for the disposition of motor transport establishments with fleets of vehicles equipped with gas cylinders, and also a long-term plan for the construction of filling stations for compressed and liquified gas. [Text] [Minsk SOVETSKAYA BELORUSSIYA in Russian 5 Dec 84 p 2] 12659

VOLGA PRODUCES COMPACT CAR--Togliatti--There are things other than the launch-of ships which are signified by the traditional bottle of champagne. On New Year's Eve, workers, engineers and designers of the Volga Motor Vehicle Works imeni 50-letiya USSR took part in this ritual. The first VAZ-2108 cars were coming off the conveyors. The new car, which is the basic model, already has a name--Sputnik. The Sputnik has many fine features. New materials and plastics not only make it lighter, but lend it elegance and make it more comfortable. Concerning its operational qualities, as the specialists evaluate it, the "No 8" [vos'merka] can compete with the best of the foreign models. Using the Sputnik as a starting point, two more models are slated for production. They will have different body styles. Accordingly, the engine's horse-power will be raised, from 55 to 75. Thus, the first Sputniks from Togliatti have gone into orbit on terrestrial roads. Mass production of these cars will begin, starting with the new year. [By V. Shalgunov, PRAVDA correspondent] [Excerpts] [Moscow PRAVDA in Russian 22 Dec 84 p 3] 12659

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RAIL SYSTEMS

NEW RAIL LINE OPENED FROM UZHGOROD INTO CSSR

Moscow IZVESTIYA in Russian 3 Nov 84 p 1

[Article by IZVESTIYA special correspondent V. Vukovich: "Mountain Mainline"]

[Text] A new railroad line has been laid across the Soviet-Czechoslovakian border. It links the Kapushany Station in the CSSR and Uzhgorod-2 in Transcarpathian Oblast.

The construction of this additional crossing required building a bridge across a river, the erection of service facilities and the installation of catenary supports for tens of kilometers. In short, everything essential for the steady movement of trains.

The new border crossing will increase the capacity for moving important freight through the large railroad complex which has developed in Transcarpathian Oblast in recent years. It is often called a "dry land port". Initially, the Chop Station was the only All sorts of equipment for moving freight has been introduced here. However, the growth in trade between CEMA countries required additional "gateways" for transportation. This is when the Ushgorod-2 Station appeared on the map. Trains full of Soviet ore are dispatched from its tracks to the Koshitskiy Metallurgical Combine in the CSSR. The further development of trade led to additional expansion of the zone for the Transcarpathian "dry land port". It now includes the stations of Batevo and Mukachevo. This has accelerated the handling of thousands of tons of imported freight and their dispatch to their destination.

So, a new railroad border crossing has gone into operation. It will increase the capacity of transport linkages between CEMA countries.

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RAIL SYSTEMS

MOSCOW METRO CHIEF ON OPENING OF NEW STATIONS

Moscow GUDOK in Russian 26 Dec 84 p 4

[Interview with Yuriy Vasil'yevich Senyushkin, chief of the Moscow Metro, by V. Yegorov; time and place not given: "At the Rush Hour on a New Line"]

[Text] The new 6.4 kilometer section of the Gorkovsko-Zamoskvoretskaya line from the Kashirskaya Station to the Orekhovo Station will go into operation at the end of this December. The Kantemirovskaya and Lenino Stations are located on it. The total length of Moscow Metropolitan lines now reaches the 200 kilometer mark. We asked Yuriy Vasil'yevich Senyushkin, the chief of the capital's Metro, to explain traffic movement on the Gorkovsko-Zamoskvoretskaya radial line.

[Yu. V. Senyushkin] Back during the construction of the Avtozavodskaya-Kakhovskaya Line, 4 tracks were laid at the Kashirskaya Station, 2 of which were intended for the new section. This metro main station should also become the distribution station which will, to a considerable degree, determine the organization of train movements. The automation and tele-mechanical equipment at the Kashirskaya Station have been rebuilt to link up the operating line to the new section and organize train traffic in two directions.

I want to remind you that the Gorkovsko-Zamoskvoretskaya route is one of the most heavily used. Up to 1.5 million passengers daily use the blue expresses. This is more than 19 percent of the total ridership of the 9 underground lines. This load is especially heavy during the rush hours, during which 13 percent of the passengers are hauled. This is considerably higher than for the metro as a whole.

After equipment reconstruction and modernization, the line's capacity will be increased to 45 pairs of 7 car trains per hour. This capacity, the maximum possible with the present system of automatic block control, will make possible train movement at 80-second intervals.

However, even with this, there are great difficulties with movements on the lines, especially at the Kashirskaya and Kolomenskaya Stations. In the morning rush hours we need 2 to 4 daily reserve trains as limited to these stations.

With the new section's opening, we expect additional passengers, especially from the Lenino Station, located near the Kursk route of the Tsaritsyno Railway

Station. After all, many of those who previously took electric trollies to the Tekstil'shchiki Metro Station will now use the new station.

Additional difficulties are arising for another reason. It was intended to operationally introduce the Kashirskaya -- Orekhovo Section of the Metro after the extension of the Serpukhovskaya Line to the Borovitskaya Station. Passengers would then have the possibility of traveling to the city center without transferring at the Serpukhovskaya Station. This would reduce the load on the Kashirskaya -- Kakhovskaya Section by 25,000 persons during the rush hour. However, the introduction of the section on the Serpukhovskaya Line to the Borovitskaya Station has been moved to 1985 due to hydrogeological difficulties and the need to take additional measures to protect an old structure which is nearby.

The continuing expansion of Orekhovo-Borisovo Rayon will further increase the number of passengers. As a result, the Gorkovsko-Zamoskvoretskaya Line will not be able to handle the growing passenger flows when the Kashirskaya -- Orekhovo Section goes into operation.

This question was examined in detail at a special meeting of representatives from the Main Architectural-Planning Administration of the Moscow Gorispolkom, the Main Moscow City Transportation Administration and the Metropolitan. It was decided that during the first period of operation, train movement should be organized as follows: The complete 45 pair schedule should only be introduced on the Rechnoy Vokzal -- Orekhovo Line. On the Kashirskaya -- Varshavskaya Section it will be somewhat unusual for the Moscow Metro. Here use will be made of the shuttle principle of movement on both tracks, with a frequency of nine pairs of trains per hour. It was decided to temporarily restrict the entrance to the Varshavskaya Station during rush hour. There will be no train movement to the Kakhovskaya side, and the station will be closed both to incoming and to transfer passengers.

Passengers who had previously got off at the Kakhovskaya Station can use specially organized express bus service to the Kashirskaya, Kolomenskaya and Avtozavodskaya Stations. Some of the passengers will use the Metro's Serpukhovskaya Line.

This system will continue until the construction of turnaround tracks at the Kashirskaya Station, which will permit the organization of more frequent autonomous movement on the Kashirskaya -- Kakhovskaya Section.

[Question] But won't this organization of train movement be somewhat inconvenient to passengers?

[Answer] Yes, we are aware of that. Therefore, during the first period we will study actual passenger flows and station loads. Depending upon the results of this study, if the new section does not have the planned growth in passengers, some of the trains going to the Orekhovo Station can be rerouted to the Kakhovskaya Station. When the new section starts up, traffic on the Serpukhovskaya Line will be increased from 20 pairs of 6 car trains to 27 pairs of 7 car trains per hour.

In concluding our discussion, the chief of the Moscow Metro asked if he could dwell on another important question.

"The high intensity of train movement," Yu. Senyushkin stated, "requires that passengers strictly observe the Rules for the use of underground railroads. Every day about 7 million people use the Metro. It is very important that existing rules not be violated. Passengers frequently do not move to the middle of cars to sit down, but stand near the doors, hindering entrance and exit. This delays trains at stops, which are only 20-25 seconds. Train movement in the Metro is calculated strictly in seconds. The slightest, even most insignificant delay can cause disruptions in the schedule.

"I want to stress once more that there should be complete mutual understanding between train operators, controllers, platform and escalator staff, and other underground workers and passengers. This is possible only with the precise observation of Rules for the Metro's use."

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RAIL SYSTEMS

RYBATSKOYE STATION OPENS ON LENINGRAD METRO

Leningrad LENINGRADSKAYA PRAVDA in Russian 29 Dec 84 p 1

[Article by LenTASS: "New Kilometers of Underground Routes"]

[Excerpt] The Lenmetrostroy [Leningrad Metro Construction Administration] is celebrating the forthcoming elections to the RSFSR Supreme Soviet and to local soviets with large labor successes. It was ahead of schedule in fulfilling the current year's plan and was considerably ahead of normed deadlines for the operational introduction of the new section of the Leningrad Metro imeni V. I. Lenin with the Rybatskoye Station. Yesterday this line hauled its first passengers. A celebration meeting held at the new station was dedicated to this event.

The speakers noted that the introduction of the new underground line will solve a number of important problems. The Metro's Nevsko-Vasileostrovskaya Line came to the surface at the Rybatskoye Station. The Nevskoye Electric Depot will be put into operation here. Without it it would be practically impossible to operate the four station Pravoberezhnaya Line, the introduction of which is planned for 1985. Leningraders' transportation ties with recreation areas will also be improved. The Rybatskoye Station will be a transfer point for suburban trains on the Volkhovskoye Route and will help take the load of the Moscow Station. Workers in the expanding Rybatskoye industrial zone and inhabitants of the growing microrayon have the possibility of using the most convenient forms of public transportation. In the immediate future it is planned to begin massive residential construction in the microrayon. Its transportation problems will already be solved.

Leningrad Metro builders are increasing their capabilities and work pace from one five-year plan to the next. While during the 10th Five-Year Plan about 11 kilometers of underground lines were put into operation, since the beginning of the current five-year plan almost 15 kilometers have been completed.

Metro builders' main project is now the new, fourth line of the Leningrad Metro -- the Pravoberezhnaya. The 1985 socialist obligations for Leningrad and the oblast call for beating the schedule for the operational introduction of the section from the Ploshchad' Aleksandra Nevskogo Station to the Prospekt Bol'shevikov Station.

RAIL SYSTEMS

TWO STATIONS OPEN ON KIEV METRO KURENEVSKO-KRASNOARMEYSKAYA LINE

Kiev PRAVDA UKRAINY in Russian 25 Dec 84 p 3

[Article by V. Nikipelov: "On the Eve of Start-up"]

[Text] Construction has been completed on the Kurenevsko-Krasnoarmeyskaya Line, yet another section of the Ukrainian capital's Metro. In the next few days, the blue express trains will extend their runs from the Respublikanskiy Stadion to two new stations, the Krasnoarmeyskaya and the Dzerzhinskaya. With their introduction, the total length of underground lines in Kiev will exceed 32 kilometers.

Together with V. A. Volochkov, deputy chief of Kievmetrostroy [Kiev Metro Construction Administration], I entered the underground lobby of the Krasnoarmeyskaya Station. The mosaic panorama with Red Army figures, the columns and walls covered with bright red smalt all give it a festive appearance. The last preparations are under way for trial runs which will mark the start up of the new route.

In spite of the comparatively short length of the new section (less than two kilometers), builders encountered a number of difficulties. The most problems were caused by the difficult hydrogeological conditions: heavily saturated ground (the Lybed underground channels flowing down sand hills) and dangerous quicksand. The schedule for building the Dzerzhinskaya Station was also very short. It was built in only 5 months instead of the 12 months planned, record time for Kiev Metro builders. This was helped by the sharpness and selfless labor of hundreds of metro builders. Just a year ago many thought that the deadline for the start up of the new section would not be met.

Vladislav Aleksandrovich explained, "The problem is that up until recently the Dzerzhinskaya was planned as a route station. Urban development tendencies have called for changes in this strategy. For the foreseeable future this station is planned to be a terminal station. Naturally, this caused substantial redesigning for many facilities and the construction of a number of new installations: a train crossing area, dead end tunnels, etc.

One must also keep in mind that during its construction we had to drill about 50,000 wells and freeze the excavation pit for the future underground station. At first we encountered all sorts of difficulties. The majority of wells had to be slant drilled to avoid damaging numerous municipal utility lines."

Adding to V. A. Volochkov's comments, I will give a few figures characterizing the amount of tunnel driving work in the construction of the new section. Metro builders excavated more than 20,000 cubic meters of rock, laid about 230 kilometers of cable, 7,540 square meters of granite and 5,400 square meters of marble.

The Metro's 26th and 27th station have been built. What next? This is the question I asked of F. I. Yuzve, secretary of the Kievmetrostroy Party Committee .

Fedor Ivanovich explained. "Next year it is planned to start up the needed second transfer junction between the Kreshchatik and Ploshchad' Oktyabr'skoy Revolyutsii Station. It is also proposed to build another exit to the Conservatory at this square."

By 1987 it is planned to introduce the Leninskaya Station on the Svyatoshino-Brovarskaya Line. This will put a main line between the Kreshchatik and Universitet Stations. Then the main effort will be concentrated on the construction of a third line -- the Syretsko-Pecherskaya, which will connect the northern part of Kiev with Darnitsa in the south. The new route will begin in the distant Vinogradar area, traverse under the city center, cross the Dnepr on a bridge and then come out at the huge residential areas of Osokorki and Pozdnyaki, the construction of which is part of the general plan for the development of the capital of the Ukraine.

Construction has already begun on the first section of the new line -- from the Zolotyie Vorota Station to the Osokorki Station, a total length of more than 10 kilometers. It will have 5 deep and 2 shallow underground stations, and 2 transfer stations to other lines which will run from the Zolotyie Vorota to the Leninskaya and from the Dvorets Sporta to Ploshchad' L'va Tolstogo Station. The planned start up date for the first three stations -- Zolotyie Vorota, Dvorets Sporta and Mechnikova -- is 1988.

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RAIL SYSTEMS

PROGRESS IN ELECTRIFICATION OF BAM'S WESTERN SECTOR

Moscow TRANSPORTNOYE STROITEL'STVO in Russian No 10, Oct 84
pp 15-16

[Article by E. Ya. Morits, chief engineer of Glavtranselektromontazh: "Electrification of BAM's Western Sector"]

[Text] Due to the location in BAM's western sector of the Baykal and Severomuyskiy tunnels, 6.7 and 15 kilometers respectively, which are ill-equipped, ventilation-wise, to handle diesel trains on a scale approaching planned capacity, and also because of the difficult longitudinal profile of the terrain in these parts, it has been decided to electrify the entire 656-kilometer stretch between Lena and Muyakan with industrial-frequency AC of 27.5 kilovolts.

The traction substations are to be fed via a 220 kv high-voltage line already put in place by the Ministry of Power and Electrification. In all, 15 substations of 220/27.5/10 kv will be erected on the stretch, supplying power to all consumers at the stations and in surrounding areas. Between stations the overhead contact wire will be of the compensated suspension type with a PBSM bimetallic carrier cable 70-95 mm² in section, in the vicinity of the tunnels - with copper cable and a trolley (contact) wire 100 mm² in section (MF-100). At the stations proper the contact wire is of the semi-compensated type with a bimetallic cable and an 85 mm² trolley wire. The pylons of the overhead contact wire are of frost-resistant reinforced concrete.

Credit must go to TsNIIS for its very timely development of the new 15.6-meter long reinforced-concrete pylon specially modified for the weather conditions of BAM. The use of this pylon significantly reduces labor input into construction of the longitudinal two-circuit high-voltage line of 10+35 kv because it completely eliminates the need for DS-type foundations housing the 11 and 13.6-meter high pylons that limit linear suspension. The new pylons have proved effective in other regions as well, especially the rocky sections of the Transbaykal and Alma-Ata Railroads.

Also especially developed for BAM conditions were a new method and technology to ground electrical units. As established during the

design stage of the project, the cost of installing 10+35 kv ground plates on pylons housed in the body of the earth embankment and in transformer substations near the tracks if traditional appliances are used (deep-sunk elongated counterweight ground plates, vertical in-depth ground plates, all of which are recommended for sections where the relative resistance factor of the ground is high) can exceed 30 percent of the cost of erecting the electrical units themselves. TsNIIS in conjunction with MIIT, the project designers and the builders, has drawn up recommendations on grounding appliances that use the tracks as natural ground; metal grid-levelers connected to the rails are recommended for use as artificial grounding devices. The implementation of these proposals by BAM would save over 6 million rubles, cut metal consumption by over 100 tons and significantly reduce labor input.

The draft plan for 1985 calls for the commissioning of the first electrified stretch Ust'-Kut (Lena) - Nizhneangarsk (343 km), with 158 km to be put onstream in the first half of the year. Simultaneously with the electrification an automatic block system is being put up. This will be fed via a longitudinal high-voltage line of 27.5 kv installed on the pylons of the overhead contact line.

To successfully complete and put into operation a section of such considerable length in the course of a year it is imperative that a sufficient amount of construction and installation work be accomplished in the preceding year. Nevertheless, "Lenabamstroy" has so far not prepared a single stretch of track and not one station for installation of the contact wire. The construction of the traction substations has, to all intents and purposes, not begun, even though the construction of 8 substations was to have been carried out in 1983 on a scale that would have readied them for installation in the first half of 1984.

Installation work on the contact wire and the traction substations of BAM's western sector has been assigned to electroinstallation train No.705 of Transelektromontazh. Several sector teams have already redeployed and are working full steam. New ADMS contact-wire installation machines will be sent down to the sector to replace the standard AGVM auto-type railcars. The sector will also receive several of the recently-created hinge-boom AD4 KS machines. These mechanisms will significantly reduce the volume of manual labor and allow the use of power tools, something the auto railcars now in operation are not equipped for. New methods of installing and adjusting equipment and oil-filled apparatuses developed by TsNIIS will be used at the traction substations.

Transsvyaz'stroy has already laid the main communications cable along the entire Lena-Nizhnevartovsk stretch, of which 262 km have been put into operation. In addition, two communications centers have been built and equipped. Another construction trust, Transsignalstroy, has installed and activated signal, centralization and automatic block systems at nine stations. This year

the two construction trusts are faced with the very complex task of installing the automatic block system, electric centralization devices servicing the switches of neighboring stations, signal systems, communications and power-supply devices and, finally, the contact wire itself in the Baykal tunnel.

We are confident that the use of new machines and mechanisms and the assimilation of advanced work methods will enable us to complete on schedule the installation of all power-supply units and the electrification of BAM's western sector.

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RAIL SYSTEMS

TRANSBAYKAL RAILROAD SHILKA-KARYMSKAYA LINE ELECTRIFIED

Moscow GUDOK in Russian 5 Jan 85 p 1

[Article by GUDOK correspondent A. Sorokin: "Steps to Electrification"]

[Text] In spite of the minus 40 degree weather, hundreds of people gathered on the platform of the Shilka Station. They included illustrious veterans and Heroes of Socialist Labor, the engineers N. Solov'yev and S. Azarenkov. There were speeches and an orchestra, everything to celebrate an important event. The beginning of electrified operations on the 151 kilometer Shilka -- Karymskaya Section.

At one time there were many who did not believe that this could be done on time, as it turned out to be a very difficult section. It has short radius curves and is squeezed between the Ingoda River and mud and rock. It was even suggested to change the route. However, builders' selfless labor helped overcome all difficulties.

The speakers at the gathering, A. Dovgyallo, first deputy chief of the Transbaykal RR and state commission chairman, M. Isachenko, first secretary of the Shilka Raykom and V. Plyaskin, senior electrician at the Shilka energy section all gave their regards to builders of SMP's [Construction-Installation Train] No 263 and 265 of the Transbaykal Transportation Construction Trust, and SMP-807 of the Transportation Signal Construction Trust.

Electrical installation workers of the SMP-701, Transportation Electrification Installation Trust, under the leadership of S. Yangicher installed a total of 450 kilometers of contact wire and built 3 traction substations. Communications workers from SMP-870, led by V. Pokhil'ko took only six months to do an excellent job of rebuilding all mainline and local telephone lines on the Urulga - Shilka Section.

The honor to operate the first electric locomotive was awarded to the engineer I. Aranin and his assistant V. Seryshev.

The long train arrived at Karymskaya on time. Keep in mind that the day before, the Belogorsk -- Shimanovskaya Section of the Transbaykal Railroad was commissioned. Together with this new victory, the Shilka -- Karymskaya Line, there are almost 300 kilometers of electrified mainline.

RAIL SYSTEMS

DIVISIONS MERGED ON LVOV, ODESSA RAILROADS

Moscow GUDOK in Russian 10 Jan 85 p 2

[Article: "Official Department -- On the Unification of Divisions"]

[Text] In order to improve the management of the transportation process and to eliminate excessive management elements, on 1 January 1985 the Lvov and Ternopol Divisions of the Lvov Railroad were merged into the Lvov Division. The following stations are the boundaries of the Lvov Division: Mostika-2, Yavorov, Yanov-Lvov, Starzhava, Nizhankovichi, Rava-Russkaya, Sokal, Stoyanov, Krasne, Lanovtsy, Podvolochisk, Grimaylov, Gusyatin, Skala-Podolskaya, Ivane-Puste, Zaleshchiki, Buchach, Khodorov, Morshin, Borislav, Truskavets and Berezhany inclusively, and Syanki and Lavochna exclusively for the Lvov Division.

The Odessa and Kotovskiy Divisions of the Odessa Railroad are merged into the Odessa Division.

The Khristinkovka -- Zyatkovtsy -- Vapnyarka and Demkovka -- Trostyanets-- Podolskiy Sections have been transferred to the Shevchenko Division.

The following stations are the boundaries of the Odessa Division: Izmail, Razdelnaya-1, the signal block at the 1,437th kilometer (managed by the Razdelnaya Switchyard Station), Slobodka, Kamenka-Dnestrovskaya, Yary, Rudnitsa, Vapnyarka, Yampol and Kolosovka inclusively and Bessarabskaya and Podgorodnaya exclusively for the Odessa Division.

The following stations are the boundaries of the Shevchenko Division: Zyatkovtsy, Uman, Dashukovka, Lyaplava, Soroka and Ivakhny inclusively and Grebenka, Chernoleskaya, Pomoshnaya, Vapnyarka, Mironovka and Andrusovo exclusively for the Shevchenko Division.

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CSO: 1829/103

RAIL SYSTEMS

BRIEFS

MARABDA-AKHALKALAKI LINE CONSTRUCTION--Tsalkskiy Rayon (Georgian SSR)--Train movement, true, so far only work trains, began on a 45-km section from Marabda Station to Nadarbazevi. By the year's end, track laying will be completed on another 78 kilometers, to the rayon center Tsalka. Thus, this year half of the Marabda-Akhalkalaki railroad line now under construction will go into operation. This project is of great economic importance to the republic. The region around the line is rich in natural resources, in particular building materials -- tuff, perlite and gravel. Based on the large deposits, six mining enterprises are under construction. Trains hauling freight for these projects are already moving along a finished stretch of track. The railroad is being built under difficult conditions. The region is hilly; builders will have to construct 12 bridges across rivers and ravines. Bridges have already been built across the Algeti, Geti and Chivchivi Rivers, and one across the Khrami is now being built. The plan calls for 13 stations on the route, 4 of which have already been built. [By EKONOMICHESKAYA GAZETA correspondent A. Gordiyenko] [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Nov 84 p 16] 11574

DR-1A DIESEL TRAIN APPROVED--Riga--The State Interdepartmental Commission has recommended the production of the DR-1A, a fundamentally new diesel train developed at the Riga Railcar Building Plant. The new train's main advantage is its economy. For example, the service life of the brake disks has been increased sevenfold, that of the electrical system transponders and relays -- sixfold, and of starter-generators -- twofold. The total motor service life of the main power unit has increased by 15 percent. This means that repair costs are reduced. There are marked improvements in the comfort of passenger compartments and the operator's cab. A thermostat assures even temperatures and saves considerable fuel. There is improved anticorrosion protection for the train's metal exterior. The new model can be distinguished from other trains a long way off. It is blue with lateral gray stripes. The two earlier models of the Riga diesel trains of similar construction are marked with the honorary pentagon. The commission concluded that the present model will also meet all requirements for the highest quality category. [By SOTSIALISTICHESKAYA INDUSTRIYA correspondent V. Proskura] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Dec 84 p 2] 11574

VL-85 LOCO TESTING IN SIBERIA--Rostov--The first powerful VL-85 electric locomotive arrived at the Bogotol Station on the Krasnoyarsk Railroad, dispatched by Novocherkassk electric locomotive builders for experimental operation in Siberian conditions. "The new 2-section, 12-axle, 13,600-hp locomotive is intended above

all for the Baykal-Amur Mainline, where it will have to use its 'broad shoulders' on heavy trains running over difficult profiles," explains P. Shtepenko, the project's chief designer at the All-Union Scientific Research, Planning, Design and Technological Institute of Electric Locomotive Building. "The VL-85 is designed for breakdown-free operation at -60°." [By SOVETSKAYA ROSSIYA correspondent Vadim Ogurtsov] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 19 Dec 84 p 1] 11574

BAM'S TYNDA-LARBA LINE OPERATIONAL--Tynda--Yesterday the 130-km Tynda-Larba line on the Baykal-Amur Mainline was put into permanent operation. The first Ministry of Railways trains will move on it in these days prior to the new year. The start-up complex includes the stations of Kuvykta and Khorogochi and two of the six sidings located in this section. Altogether this year 260 kilometers of main track have been put into operation on the BAM, which now stretches 1,780 kilometers. Next year it should be increased another 600 kilometers. The next sections are Urgal-Fevralsk, Larba-Ust-Nyukzha and Baykal Tunnel-Severobaykalsk. In addition, builders have to electrify the 340-km Lena-Nizhneangarsk stretch. The taut program for next year forced the work pace on the Tynda-Larba line. Thanks to its introduction, it will be easier for the BAM's builders and operators to handle next year's planned permanent introduction of many facilities and sections on the line. [By GUDOK correspondent I. Krasikov] [Text] [Moscow GUDOK in Russian 25 Dec 84 p 3] 11574

BAM'S KODAR TUNNEL DRIVEN--Kodar (Chita Oblast), 24 December (TASS)--The last explosion resounded today in the depths of the Kodar Range. The tunnel crews led by V. Bezridnyy and Hero of Socialist Labor N. Yeremenko, digging from the west and the east portals of one of the most difficult tunnels on the BAM, met deep underground. "We have been moving towards this event for a little more than two years," said V. Bezridnyy, "although the plan called for four years. I remember each of the 1,940 meters of the underground corridor." The permafrost required selflessness and high degrees of skill from the builders. Mining safety methods were developed on the spot. Concrete lining work has been speeded up and will be completed in the middle of January. The Kodar Tunnel was accurately driven; deviations do not exceed the length of a match box. The great labor of all the tunnelers was crowned with victory. In driving the tunnel, they excavated 156,000 cubic meters of rock and poured 45,000 cubic meters of high-quality concrete. They acquired valuable experience in the constructions of tunnels under the most difficult permafrost conditions. Seven tunnels have already been driven on the BAM route, and the last, the Severomuyskiy, is in progress. Next year the first trains will pass through the Kodar Tunnel. [Text] [Moscow GUDOK in Russian 25 Dec 84 p 3] 11574

VORKUTA STATION ENLARGED--Vorkuta--When the first 24-car passenger trains started arriving in Moscow from Yaroslavl, Gorkiy, Kostroma and Cherepovets, they started thinking about making up such consists in Vorkuta also. It is a difficult task to run a long train from the area beyond the Arctic Circle to Moscow -- more than 2,200 kilometers. By spring the Vorkuta Station will be equipped with a special track and platform. Recently, the city's third station since the war appeared. It is attractive, spacious and warm. It was built through the efforts of industrial enterprises in the city. An affiliate of Komikommunproyekt [Komi Communal Planning and Design Institute] did the technical documentation, the repair and

construction administration collective at the Vorkutaugol' [Vorkuta Coal] Association rebuilt the building, while the party's gorkom and the gorispolkom supervised the course of work and organized help from other enterprises. The area around the station was improved. The gorispolkom allotted 300 square meters for ticket offices on Lenin Street, where all the main bus routes converge. Such offices have also appeared in the settlement of Vargashorsk, where the largest mine is located. [By Ye. Pinkus] [Text] [Moscow GUDOK in Russian 5 Jan 85 p 2] 11574

EXPANDED BAM PASSENGER SERVICE--Kunerma, 5 January (TASS)--Access to the country's rail network was obtained by residents in the northern regions of the Trans-Baykal, where, three months ago, the last rails on the main track of the BAM were laid. This was made possible by the opening of regular passenger traffic through the Baykal Tunnel. This difficult section of the new mainline has still not been put into permanent operation, as the engineering plans call for electrification. However, after taking thousands of air samples in the 7-kilometer long tunnel, specialists concluded that one could run diesel-powered passenger trains through it if definite intervals were observed. Such trains can pass through the tunnel in only 20 minutes. Taking the wishes of builders and operating personnel into account, the new train's schedule is arranged so it can connect with the Krasnoyarsk-Kunerma consist. Prior to this, inhabitants of settlements on the head section of the mainline which has been put into permanent operation had direct connections with the large cities of Siberia only in the summer. During the rest of the year there were only local trains. With the completion of the BAM's "golden link," the number of passengers has grown and there are now daily west-bound trains. [Text] [Moscow GUDOK in Russian 6 Jan 85 p 1] 11574

NEW KRASNOYARSK PASSENGER SERVICE--Krasnoyarsk--The first day of the year saw the beginning of regular schedules for diesel-powered passenger trains between the urban rayon of Solnechnyy and the Krastyazhmash [Krasnoyarsk Heavy Machinery] Production Association. The address of the machinery building giant is somewhat unusual: the 18th kilometer post on the Yenisey route. From this one can see that it is not easy to get to the Krastyazhmash construction site. The collective at the Krasnoyarsk Transport Construction Trust undertook to help workers and builders (Krastyazhmash is still under construction). Cutting norm time in half, workers of construction-installation train No 276, bridge detachment No 7 and special construction administration No 10 laid the passenger line and ensured passage of the first train. Using this railroad to haul builders and workers from the new urban rayon built especially for Krastyazhmash "deprived" an entire motor vehicle base of work. The more than 30 buses previously engaged in hauling workers are now used on regular city routes. [By GUDOK correspondent Yu. Vakhurin] [Text] [Moscow GUDOK in Russian 6 Jan 85 p 1] 11574

CSO: 1829/97

MARITIME AND RIVER FLEETS

BREAKDOWN OF USSR MARITIME MERCHANT FLEETS AS OF 1 JULY 1984

Moscow MORSKOY FLOT in Russian No 1, Jan 85 p 18

[Text] The USSR Registry reports the status of the USSR Maritime Fleet, with breakdown of the data by ministries and departments as of 1 July 1984 (including self-propelled ships with gross register tonnage of 100 reg. tons or more):

TYPES OF SHIPS	Ministry of the Maritime Fleet			Ministry of the Fishing Industry			Others			In All		
	Registered tonnage, par. 1	Registered tonnage, par. 1	Deadweight, t	Registered tonnage, par. 1	Registered tonnage, par. 1	Deadweight, t	Registered tonnage, par. 1	Registered tonnage, par. 1	Deadweight, t	Registered tonnage, par. 1	Registered tonnage, par. 1	Deadweight, t
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<u>Passenger and Passenger-Cargo</u>	195	640 420	180 269	9	6353	5383	69	26 215	4515	273	673 188	190 167
Including:												
Ferries	48	221 101	63 187	—	—	—	—	—	—	48	221 101	63 187
<u>Drv Cargo Ships</u>	1493	9 029 869	12 179 933	531	1 530 513	1 518 779	272	489 264	584 550	2296	11 049 644	14 283 262
Including:												
Timber Carriers	369	1 447 707	2 021 275	—	—	—	2	9628	13 560	371	1 457 335	2 034 835
Container Ships	52	477 286	485 208	—	—	—	—	—	—	52	477 286	485 208
RO-RO Ships	55	387 774	550 636	—	—	—	—	—	—	55	387 774	550 636
<u>Tankers</u>	306	4 218 930	6 433 754	106	246 147	308 263	8	53 839	74 148	420	4 513 916	6 816 165
Including:												
Oil Tankers	280	3 990 517	6 188 584	84	207 470	261 992	6	30 456	70 647	370	4 248 443	6 521 223
Gas Tankers	11	186 625	201 519	1	614	270	—	—	—	12	187 239	201 789
Chemical Ships	3	9345	9960	—	—	—	—	—	—	3	9345	9960
<u>Combination Carriers</u>	11	688 003	1 194 432	—	—	—	30	80 934	85 705	41	748 937	1 280 137
<u>Fishing Ships</u>	—	—	—	2593	3 432 657	1 915 466	5	3023	1423	2598	3 435 680	1 916 889
<u>Special Purpose Ships</u>	55	202 331	134 739	208	1 507 918	1 194 621	167	226 393	100 197	430	1 936 642	1 420 557
<u>Technical Ships</u>	200	186 969	148 874	30	17 825	9809	189	218 735	138 207	419	423 529	295 890
<u>Auxiliary Service Ships</u>	514	470 064	735 900	341	139 559	102 312	193	111 795	69 965	1048	721 418	508 177
Including:												
Tugboats	286	91 483	33 821	199	81 761	35 552	106	41 612	23 441	391	214 856	92 814
Icebreakers	37	235 988	105 104	—	—	—	—	—	—	37	235 988	105 104
<u>TOTAL</u>	2774	15 431 786	20 607 901	3818	6 880 972	5 053 633	933	1 210 198	1 058 710	7525	23 522 956	26 720 244

KEY: 1. Number of ships 2. Gross register tons 3. Deadweight tons

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MARITIME AND RIVER FLEETS

CHIEF ON CENTRAL ASIAN SHIPPING COMPANY ACTIVITIES

Moscow IZVESTIYA in Russian 29 Oct 84 p 3

[Interview with Nazar Bazarovich Bazarov, chief of the Central Asian Shipping Company, by IZVESTIYA correspondent V. Shmygancvskiy; in the Turkmen SSR, date not specified: "Captain of the Desert Fleet"]

[Text] N. B. Bazarov has been appointed chief of the Order of the Red Banner of Labor Central Asian Shipping Company. Nazar Bazarovich Bazarov, 45, finished Chardzhou River Tekhnikum and the Odessa Maritime Fleet Engineering Institute. He worked as director of a ship repair yard, went through Soviet worker school and assumed the position of 1st deputy chairman of the Chardzhou Oblast Soviet of People's Deputies ispolkom.

[Question] Nazar Bazarovich, running into people in naval uniform in the sands of two great deserts is somewhat unusual, you'll agree.

[Answer] What's so surprising? We belong to the USSR Ministry of the Maritime Fleet. Along with "leviathans" like the Black Sea, Baltic, Far Eastern and other shipping companies, we have one concern -- to transport cargo.

[Question] Obviously there is a need for some explanation here. Might we say that the "leviathans," as you call them, share the oceans, but you have the Amudarya?

[Answer] Our river has long united Turkmenistan, Uzbekistan, Tajikistan and Kazakhstan. Should we establish a river fleet ministry? Independent administrations? This would be artificial. Many years ago it was decided to "give" us to the powerful Maritime Fleet -- all the more because we provide both coastal and overseas transport.

[Question] Just what is the 17th shipping company in the Maritime Fleet?

[Answer] It is 1,500 kilometers of river routes -- along the river and the Karakum Canal; 6,000 workers, hundreds of non-self-propelled barges and tugs. In a year we carry more than 4.5 million tons of cargo, which is about equal to the volume of the port of Vladivostok. Eighty percent of this volume goes by ferry. We deliver cotton, cucurbits, building materials, chemicals and equipment. We have a large engineering fleet -- suction and bucket dredgers to cope with the treacherous river.

[Question] No wonder they call it "Dzheykhun" ("Turbulent") in Arabic!

[Answer] No doubt you've heard how once, having changed its course, the Amu began to mercilessly wash away Turtkul, the capital of Karakalpakiya. We had to move the capital north to a new city, now known to everyone as Nukus. Even now the river is capable of similar surprises.

[Question] What about depths?

[Answer] There we really envy seamen. The channel we have ranges from 25 meters -- enough for a submarine -- to 50 centimeters. Therefore, all ships have to have a draft of no more than a meter, but carrying capacity must be at least 500-600 tons.

[Question] What else is unique about your organization?

[Answer] Obviously, that we are building our own fleet -- in Chardzhou and in Aralsk. We've never written off paddlewheel motorships. What else? We cruise some of the cleanest rivers in the world. Don't be surprised at the appearance of the Amudarya. No industrial wastes of any kind pollute it. It is cloudy because of the sand it carries.

[Question] But isn't the port of Aralsk actually closed because of shallow waters?

[Answer] The water level in the sea has dropped 8 meters over the last 10 years. The sea has receded several kilometers from the port. So, finally, navigation on the Aral Sea was stopped. But the shipyard ... we are expanding it. It sends ship sections to Chardzhou by rail for assembly. Moreover, the Aralsk Yard supplies the entire ministry with R/O trailers for transporting large containers.

[Question] Does the desert fleet have a future?

[Answer] Unquestionably. We are now providing transport services between our republic, Uzbekistan and Afghanistan (which has no ships of its own). Navigation on the Karakum Canal will increase. It's not impossible that, in time, we will go as far as Ashkhabad (690 kilometers by water from Chardzhou).

[Question] What demand is there for tourist and pleasure cruises?

[Answer] Right now we don't have such ships and we are not rich in the exotic. Our basic landscape is red-hot sand.

[Question] We wish your skippers and captains 7 feet under keel!

[Answer] Are you kidding? One foot would be more than enough!

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CSO: 1829/104

MARITIME AND RIVER FLEETS

VOLGOTANKER CHIEF ON PROBLEMS IN SHIPPING PLAN FULFILLMENT

Moscow VODNYY TRANSPORT in Russian 8 Dec 84 p 2

[Report on interview with Vladimir Vasil'yevich Permyakov, chief of the Volgotanker Shipping Company, by V. Fedulov in Kuybyshev City, in the column "To Improve the Mechanism of Management": "Planning Costs Have Created Difficulties in the Work of a Large Collective"; date not specified]

[Text] The collective of the Volgotanker Shipping Company--initiator of the sectorial socialist competition--reported fulfillment of the petroleum shipment plan for the 4 years of the five-year plan as far back as 25 October. However, despite the success, the results of this navigation season will be unencouraging--its task was not fulfilled. Why did this happen? The question is to shipping company chief V. Permyakov.

[Answer] The entire cause is in the existing planning practice, which provides for a yearly change in annual tasks. For example, the shipping company owing to some fortuitous reasons considerably exceeded its shipment plan last year. The achieved result automatically became a basis, which was used to plan the volumes of petroleum shipments this year. After reaching the level of control figures for 4 years of the five-year plan, we actually were unable to maintain the achieved growth rate of production indicators. The shipping company was in the lead in the sectorial socialist competition for many years. But in 10 months of the current year, the lag behind the plan amounted to 1,429,000 t. What is the cause of this setback?

The outcome of shipments was decided long before they began, in the period when the shipping company's plan was being confirmed for 1984. Already then a discrepancy was visible in it--the planned volumes exceeded the order of clients by 640,000 t. In March, the USSR Goskomnefteprodukt [State Committee for the Supply of Petroleum Products], following persistent requests by the Freight Main Administration of the MRF [Ministry of the River Fleet], made appropriate corrections, but even after that the order was not confirmed by cargo for 320,000 t. When the navigation season began it was discovered that the shipping company had to haul 400,000-450,000 t more petroleum products monthly than was actually required by the consumer.

The lack of coincidence in the ordered and presented volumes has led to the fact that the collective has fulfilled its second quarterly plan by only 89 percent. In April, the difference between the monthly order of the RSFSR State Committee for the Supply of Petroleum Products and the plan confirmed for the shipping company amounted respectively to 2.7 and 3.0 million t. According to the quarterly breakdown of the RSFSR State Committee for the Supply of Petroleum Products, we should have hauled 5.1 million t in May, that is 100,000 t less than the shipping company's assignment. And in the final, by-the-month version, the clients have reduced the order to 4.7 million t. Aren't there a bit too many inaccuracies for the first 2 months of the navigation season?

The lack of clarity in defining the perspective and the impossibility in planning a 10-day period in a relatively accurate manner have led to the wrecking of the traditional scheme of cargo traffic. The volumes of haulage of petroleum products from Makhachkala, Astrakhan and Volgograd were reduced, and the empty runs in the fleet, which was assigned in the northwestern direction, were increased. No efforts on our part could compensate for the lag. We do not rule out our own oversights. Our inability on account of difficult weather conditions to fully put the fleet in operation on the Volga, Kama and Belaya was the reason for shifting 250,000 t of petroleum cargo from water to railway transportation.

We have worked out measures which provide for hauling 1.5 million t additionally to the plan with a cargo turnover of 1.4 billion ton-kilometers. However, the problem boiled down to where to find such a quantity of cargo, when, for example, the orders in July and August did not stretch as far as the shipping company's confirmed plan of 840,000 t.

[Question] At which stage was the miscalculation permitted?

[Answer] Reduction in crude oil refining at Kuybyshev and Ufa refineries by approximately 5.8 million t was known from the beginning of the year. Why this fact of no small importance was not taken into account in the Economic Planning Admin. and Freight Main Admin. of the River Fleet Ministry is not quite clear to us. They have, apparently, taken the easy way out in drawing up annual plans and have taken the result achieved last year, as I have already mentioned, as a starting point. When the assignment for shipments was confirmed, it did not join end-to-end in many positions. It is possible that the ministry relied on effective prospecting for the missing petroleum products, although it would have been simpler to obtain exhaustive information at the Minnefteprom [Ministry of the Petroleum Refining and Petrochemical Industry] and the USSR State Committee for the Supply of Petroleum Products and then, proceeding on the basis of new data, to determine the final volumes of petroleum shipments. But this was not done, and subsequently the Ministry of the River Fleet received a response from the USSR State Committee for the Supply of Petroleum Products: "...there is no possibility for increasing the volumes of haulage."

[Question] Vladimir Vasil'yevich, what can explain the following fact: despite an acute shortage of petroleum cargo, the shipping company still fulfilled its August, September and October shipment plans?

[Answer] A decisive role here was played by two aspects. On account of a change in intraorganizational relations, some petroleum refining industry enterprises in the Volga-Kama basin increased the output of petroleum products in that period. And the railwaymen, on their part, have rendered us, the rivermen, an "invaluable service" by working a little poorer, and the petroleum products meant to be transported by railway were shipped by water transport. This did not happen in November--the order of clients was smaller than the shipping company's assignment by 760,000 t.

It seems that in the future it is necessary to coordinate more closely the fulfillment of long-term and current tasks of sectorial and territorial development, and to take into account more fully the interests of consumers in forming production assignments. We are not at all against the growth in the volumes of shipments. We have sufficient reserves in order to cope with the most stepped-up plans. Only cargo which really exists should be included in them.

Five years ago a resolution was adopted by the CPSU Central Committee and the USSR Council of Ministers on improving planning and intensifying the influence of management mechanism on raising production efficiency and work quality. It noted in particular: to develop five-year and annual plans of production associations and organizations on the basis of economic and engineering calculations, without permitting the fixing of plan tasks only on the basis of the developed dynamics of corresponding indicators.

Unfortunately, the law on balance is not being fulfilled always. Hence there are lapses and discrepancies.

Based on the recommendations of specialized institutes of water and railway transportation and the petrochemical industry, it can be asserted that volumes of petroleum refining will be reduced in 1985 and that in the 12th Five-Year Plan it is planned to reduce the output of fuel oil by 40 percent. Its share now accounts for half of all shipments of petroleum products.

[Question] With such a prognosis by the research centers, the question of increasing the volumes of petroleum shipments appears to be a bit problematic. Are there any plans for developing new cargo traffic in the next five-year plan?

[Answer] In the future the shipping company plans to begin large scale development of cargo traffic according to the river-sea version to ports of the Black, Baltic, White and Mediterranean seas. But to realize this program we need a tanker fleet, which meets the requirements of the USSR Registry of Shipping. It will be difficult to fulfill the set tasks without tankers of the new class and oil and ore carriers of increased cargo carrying capacity. The dialectics of tomorrow must be studied today and must definitely be taken into account in long-range planning.

MARITIME AND RIVER FLEETS

CHIEF ON GEORGIAN SHIPPING COMPANY ACTIVITIES

Moscow MORSKOY FLOT in Russian No 11, Nov 84 pp 10-14

[Article by D. Chigvariya, chief of the Georgian Shipping Company: "Georgia Seamen on Labor Watch"]

[Excerpts] Navigation in Georgia has been developed for a long time. Ancient Georgia achieved a high stage in shipping in the 11th-12th centuries, which is confirmed by historical literature and fiction. The voluntary unification of Georgia with Russia, the 200th anniversary of which was marked in 1983, has given a new impetus in the development of navigation in Georgia.

Construction in Transcaucasia of railways, which linked Baku and Tbilisi, and then Tbilisi with port cities of Batumi and Poti, has spurred rapid development of the latter.

In February 1984, workers of Georgia together with all Soviet people solemnly marked the 63d anniversary of Soviet rule in the republic. The revival of water transportation has also begun with its establishment. The Soviet of People's Commissars of Georgia formed the Georgian State Shipping Company with the main administration in Tbilisi and its agencies located in Batumi and Gagra.

By an order of the minister of the maritime fleet of 20 January 1967, the Georgian Maritime Shipping Company was established on the basis of the Batumi, Poti and Sukhumi maritime ports and the anchorage points registered to them. The first tanker of the Georgian Shipping Company left Batumi with cargo for Alexandria on 2 July 1967.

The shipping company's material and technical base has grown immeasurably in 17 years. If in the latter part of 1967 we had only 13 tankers with an overall carrying capacity of 87,500 t, then today there are 48 vessels in the shipping company with a carrying capacity of more than 750,000 t. During the years of its existence, the shipping company has received vessels which meet the highest world standards: the bulk carriers "Georgiy Leonidze" and "General Leselidze" and the tanker "Josif Broz Tito" have the A1 highest class of automation.

Initially, the Georgian Shipping Company was assigned to completely master the coastal oil cargo shipments in the Black Sea-Azov basin and to deliver bunker

fuel to fishing vessels operating in the Atlantic as well as to handle shipments of small batches of export-import liquid cargo. The shipping company's functions have expanded owing to the quantitative and qualitative changes of the tanker fleet.

At the present time, we ensure shipment of a considerable quantity of petroleum products to Cuba and to countries in Europe, Asia and Africa. The shipping company is also continuing its specialization in the shipment of export vegetable oil.

Our bulk carriers sail between the ports of the USSR and Cuba, Guinea, the United States, Canada, India, Poland, Yugoslavia, Italy, France, the FRG, the GDR and other countries in transporting coal, grain, sugar, pipes, equipment, metal, chemicals and other cargo.

Further replenishment of the fleet will be carried out only with highly automated vessels, which meet the requirements of international conventions and reliably ensure the safety of cargo being transported and protection of the environment.

Coastal facilities were improved simultaneously with the growth of the fleet. The appearance of maritime ports of Georgia has changed and continues to change. New cargo warehouses with an overall area of 2,500 m² and 4,000 m² of storage facilities for material and technical supplies were constructed in them and 4 berths were built and 5 berths modernized. The Batumi port now has an attractive tourist berth, there is a comfortable maritime station in Poti and a passenger berth in Sukhumi.

In 1972, the shipping company outlined a program for the replenishment of transshipping equipment, inasmuch as the existing pool mainly consisted of obsolete and worn-out machines and could not ensure intensification of loading and unloading work. The ports of the shipping company received 26 portal cranes, two Hartman pneumatic reloaders for unloading grain and alumina, 133 pneumatic installations for grain processing, 96 automatic loaders (each) with a lifting capacity of 5 t, 70 Toyota automatic loaders, 10 bulldozers, 5 Harvester tractor loaders and other equipment. The saturation of ports with modern equipment has made it possible for their collectives to successfully fulfill the tasks facing them and to considerably increase labor productivity.

Container shipments are an innovation in the work of the shipping company's ports. This, first of all, applies to the Poti port, toward which the transit cargo traffic from European ports to Iran gravitates. The next stage in the development of port facilities is the processing of ro-ro vessels and hauling lighters.

It is difficult to manage complex economy today without utilization of modern economic and mathematic methods and means of computing technology. In 1972, an information and computer center on the base of Minsk-32 electronic computer was established for the automated control system--ASU Parokhodstvo. The ES-1022 and ES-1033 electronic computers were received and put into operation later. At the present time, the IVTs [information and computer center] has developed into a group center, which solves more than 50 tasks of various subsystems of the ASU Parokhodstvo and ASU Port.

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MARITIME AND RIVER FLEETS

CHIEF ON WORK OF LITHUANIAN SHIPPING COMPANY

Moscow MORSKOY FLOT in Russian No 11, Nov 84 pp 21-24

[Article by A. Ramanauskas, chief of the Lithuanian Shipping Company:
"The Shipping Company During the Last 15 Years"]

[Excerpts] The formation in 1964 of the Klaipeda Agency of the Baltic Shipping Company was an important step on the path to establishing the Lithuanian Maritime Shipping Company. There were 16 vessels in the agency's operational service by 1968. The collective of the agency, numbering approximately 30 people, acquired in the first five years of its existence a certain experience in the management of the fleet and in the selection and assignment of ship crew personnel. It is precisely the workers of the agency who later formed the backbone of the new shipping company's management.

On 5 November 1968, an order of the USSR Minister of the Maritime Fleet was issued, which stated: "For the purpose of further improving supervision of the fleet's work and increasing the volumes of shipments by Soviet tonnage of export-import and coastal cargo as well as for more efficient solving of questions connected with these shipments, to organize as of 1 January 1969 the Lithuanian Maritime Shipping Company."

Included in the shipping company were vessels turned over from the Baltic and Northern Shipping Companies, the Klaipeda commercial seaport, a ship repair plant, the Torgmortrans Administration [not further identified], the Inflat Agency and some other subdivisions.

Initially, the following basic directions of activity and specialization were set for us: shipment of mass cargo in the areas of the Baltic and North seas, route shipping between Klaipeda and West European ports and between Kaliningrad and Rostock (GDR) and coastal shipments of timber from Leningrad to Kaliningrad. Based on this the fleet of the shipping company was replenished with medium-capacity and route navigation vessels.

Fifteen years ago we primarily had obsolete vessels in the transport fleet of the type such as "Liberty," "Donbass" and "Shkiper Gek" with an overall carrying capacity of nearly 76,000 t.

Hundreds of seamen came to us together with vessels of the Baltic and Northern Shipping Companies. Representatives of the country's eight maritime shipping

companies have joined the new collective. Graduates of the Leningrad and Odessa higher engineering maritime schools, the Odessa Institute of Maritime Fleet Engineers, the Kaunas Polytechnical Institute, the Leningrad, Riga, Tallinn and Arkhangel navigation schools and the Novorossiysk and Pärnu navigation schools were assigned to work at the Lithuanian Shipping Company. The whole country helped in creating the new maritime transportation enterprise.

In the early seventies, the navigation geography of vessels of the Lithuanian Shipping Company considerably expanded. We have received new motorships--timber carriers of the "Mirnyy" type, four of which have been named after Lithuanian cities--"Kretinga," "Kupishkis," "Kapsukas" and "Kedaynyay." The shipping company's fleet became more actively involved in shipping export lumber from Igarka to ports in Western Europe, North Africa and Asia Minor. The good technical condition of vessels and the growing professional skill of captains have attracted the attention to the young shipping company of foreign charterers. As of 1972, timber carriers of the shipping company are being regularly chartered by firms in the Netherlands, Denmark and Sweden.

The shipping company's prestige has grown even more in the mid seventies when it received timber- and packaged-cargo carriers of the "Igor' Grabar'" type. The Lithuanian Shipping Company is becoming one of the main carriers of export lumber from Igarka.

The development of the Klaipeda commercial seaport, which has changed to an optimum work schedule, was progressing at a rapid rate. New powerful cranes appeared on the berths, the pool of intraport transportation considerably increased and new cargo lifting mechanisms and devices were introduced. The overwhelming majority of cargo which passed through the Klaipeda port was processed according to the direct "ship-car" version.

The ship repair plant was increasing its capacity. Vessels of all shipping companies in the Baltic and from the GDR as well as vessels of Klaipeda fishing enterprises came for repairs to Klaipeda.

In 1976, the shipping company received three motorships of the "Yunyy Partizan" type. Mastering of the important regular route between Klaipeda and the ports of the FRG began. It plays a significant role in ensuring foreign trade activity of our state and in our country's economic cooperation with the Federal Republic of Germany. Work according to a strict schedule and high requirements as regards the safety of cargo being transported have placed a great responsibility on the crews of route vessels, port dockers and workers of shipping and fleet operation services.

It is precisely on this route that it was possible to achieve the highest work efficiency of the fleet. Route vessels have switched over to working with minimal crew size and with comprehensive shore services. The port has formed a specialized comprehensive brigade of dockers-machine operators who process Soviet and foreign motorships operating on the route. The 8-year work experience on the Klaipeda-FRG ports route shows that a reliable form of organizing its work has been found.

The regular route links Klaipeda with ports of the German Democratic Republic, first of all, with Rostock. Some 12,000-14,000 t of rolled steel stock is shipped daily aboard vessels operating on this route from our country to the GDR. Close cooperation and international socialist competition has been organized between port workers of Klaipeda and the GDR. This relationship is being realized within the framework of the agreement on cooperation and friendship, which marked its 10th anniversary this year.

At the present time, construction of a ferry railway crossing is underway, which will link Klaipeda and Mukran (GDR). By 1990, the volume of shipments on this crossing will total 5.3 million t. The crossing will become the most important transportation main line of the Baltic Sea.

The eighties have become a qualitatively new stage in the development of the Lithuanian Shipping Company. We have begun to receive motorships of the "Kapitan Panfilov" type, each of which is capable of transporting more than 15,000 t of cargo to most remote ports in the world.

Captains of the Lithuanian Shipping Company have begun laying routes to areas far beyond the Baltic, North and Mediterranean seas. Vessels with Klaipeda registration can be seen today in ports of Canada, the United States, Mexico, Brazil, Cuba, Argentina, Guinea, Singapore and Japan. Up to 700 vessel-calls to 120 ports in nearly 30 states of all continents--such are the indicators of our fleet's operation today. Compared to what we had only 15 years ago, the growth is very considerable.

The picture of the Klaipeda port's operation is no less impressive. The steamship "Asturiya," which was mentioned earlier, was one of the four vessels which arrived in our port in 1945. Then the count increased to dozens, hundreds. In 1983, nearly 1,000 vessels with a displacement of up to 40,000 t moored at the berths of the Klaipeda port imeni Shestidesyatiletie SSSR. Calls in Klaipeda are being made by motorships from the GDR, Bulgaria, Poland, Finland, the FRG, France, Sweden, Morocco, Japan, Nigeria--almost from 40 countries in the world. Petroleum regions of the port and berths for food cargo are working intensively.

Skilled dockers-machine operators, the high rate of loading and unloading work and prompt servicing of crews--this is what attracts foreign seamen and crews of many shipping companies of the country to the Klaipeda port.

The establishment of a transportation center in Klaipeda has considerably improved organization of work in the port and in the shipping company as a whole, although we still have enough problems in our activity. There is a shortage of production areas and the port's requirements in railcars is not always satisfied. During the past 15 years, the Klaipeda port has increased cargo processing twofold, practically without expanding its territory.

The ship repair plant is working under difficult conditions. In 15 years, the volume of production output there increased 2.2-fold. The progressive method of ship repairs by foreman cost-accounting sectors has originated here and extensive work has been conducted in modernizing equipment and improving the technology of ship repairs. But all of this is conducted in extremely limited

production areas and under conditions of a shortage of workers. The question of modernization of the SRZ [ship repair plant] is one of the most important ones for our shipping company in the years immediately ahead.

In characterizing our work results in the past few years, we can cite the basic indicators of the transport fleet's activity. Today, we have 38 vessels with an overall carrying capacity of more than 240,000 t. The number of vessels, as we can see, has increased 2.5-fold in 15 years, and the tonnage more than three-fold. In 1969, the fleet consisted mostly of outdated vessels, and its average age exceeded 15 years. Today, we have at our disposal modern motorships, whose average time in operation is approximately 10 years.

In 15 years, the volume of shipments in the shipping company has increased 2.9-fold and the cargo turnover has increased almost 4.2-fold. The income from shipping abroad has increased eightfold in the same period and profits 7.4-fold.

Successes of the shipping company are formed from achievements of individual workers, crews, brigades and shifts. Our main achievement is the creation of a hard-working, organized and highly educated collective. In 1969, we had only 51 people with higher education, or 9.5 percent of the overall number of workers. Currently, the fleet of the Lithuanian Shipping Company has 27 percent of seamen with higher education and approximately 40 percent with secondary specialized education. Six out of every 10 workers in the shipping company as a whole are certified specialists.

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MARITIME AND RIVER FLEETS

TECHNOLOGICAL INNOVATIONS AID MARITIME FLEET WORK

Moscow MORSKOY FLOT in Russian No 11, Nov 84 pp 44-46

[Article by A. Drobovich, chief engineer of the Estonian Shipping Company, and G. Sakhnovskiy, engineer of the Technical Department: "According to New Technology Plans"]

[Excerpt] Successful fulfillment by the shipping company of the plan for hauling national economic cargo is promoted to a considerable degree by introducing in production of new technology in accordance with assignments of the Minmorflot [Ministry of the Maritime Fleet] and the resourceful plans of the shipping company. The collective of the shipping company jointly with party, trade union and other public organizations is devoting great attention to realization of the results of scientific and technical research and applied developments, inventions and innovations in the field of mastering and operating new modern vessels and equipment, introduction of progressive technology, mechanization and automation of production processes and introduction of computing and other new technology, on the basis of which intensification in utilization of the fleet, port structures and industrial capacities is carried out. The new technology plans, which are developed annually in the shipping company, are an integral part of the comprehensive plans for economic and social development of the shipping company and enterprises and organizations under its jurisdiction.

The basic measures of new technology plans, which are directed at raising labor productivity, improving efficiency and quality of shipments and reducing expenditures of manual and hard physical labor, are mastery of new, highly mechanized and automated vessels, whose design predetermines utilization of more efficient methods in shipping cargo and processing it in ports. Thus, domestic-built vessels of the "Ivan Skuridin" type, which were mastered in operation by the shipping company during the years of the 10th Five-Year Plan and are equipped with a ramp device, an interdeck hydraulically operated hoist and shipborne mechanized loading equipment, make it possible in a brief period of time and with small expenditure of labor to conduct loading and unloading of wheel and caterpillar track equipment, roll-trailers and containers, eliminating in so doing the hard manual labor of dockers. General purpose vessels of the "Yuriy Klement'yev" type, which were mastered by the shipping company in the 11th Five-Year Plan and which have a large opening of the deck, make it possible to greatly reduce labor expenditures in loading and unloading work and thus shorten the layover time of vessels in port under cargo handling operations. The economic

effect obtained by the shipping company from introducing into operation four vessels of the "Ivan Skuridin" type and three vessels of the "Yuriy Klement'yev" type amounted to nearly R1.5 million.

The passenger motorship "Georg Ots," which was mastered by the shipping company in the latter part of the 10th Five-Year Plan, ensures year-round transportation of passengers on the Tallinn-Helsinki route and has improved services to passengers to a considerable degree. The motor vehicle and passenger ferry "Koguva" and the shallow-draft icebreaker ferry "Vokhilayd" (both are domestic-built vessels) ensure regular year-round transportation of passengers and motor vehicles with cargo between the mainland and the islands of Saaremaa and Hiiumaa.

The shipping company has mastered containerships of the "F. Gaylis" and "Fritsis Rozin'" type. In 1983, in accordance with the plan-assignment of the Ministry of the Maritime Fleet, vessels of the shipping company transported a total of 184,100 t of cargo in containers and 160,200 t of cargo in packets against the plan of 170,000 t and 150,000 t respectively. A special sector has been organized in Tallinn at the Fleet Technical Service Base to repair containers.

Introduction of new, progressive technological processes in cargo processing also yields a saving of the layover time under loading and unloading operations and reduces the number of people engaged in cargo handling operations and the manual labor of dockers. Thus, the use by the shipping company of the package forming machine made by the (Mellers) firm (GDR) at the Punane Kunda Cement Combine and the carrying out of organizational and technical measures in the Tallinn port and aboard vessels has made it possible to comprehensively mechanize technological processes in the transshipment of export cement, to fully utilize the carrying capacity of vessels, to increase productivity of the technological line and to simultaneously reduce the number of dockers and to shorten the layover time of vessels under cargo handling operations. The economic effect obtained in the process is equivalent to economizing the labor expenditure of a 10-man brigade of dockers. Introduction in the Tallinn port for transshipping mahogany blocks of a special grab, which was made in Riga, has made it possible to raise the safety of loading and unloading work, to release four dockers working on this technological line and to considerably shorten the layover time of vessels under unloading operations. Workers of the port and the shipping company with cooperation of railway workers and as a result of long-term experiments and experimental verification have developed the most acceptable types of packet-forming equipment, which made it possible to packetize cocoa beans during loading in the West African ports and to unload them in a comprehensively mechanized manner in Tallinn with loading into railcars. As a whole, the level of comprehensive mechanization of loading and unloading work in the Tallinn port amounts to 93.8 percent.

The changeover of vessels to work according to extended operation and repair cycles is an important measure for increasing the operational period of vessels, raising labor productivity and reducing repair time and resources. In 1983, three vessels of the "Yuriy Klement'yev" type were changed over to an extended 4-year operation and repair cycle. In all 79 vessels or 92.9 percent of the overall number of the transport fleet of the Estonian Shipping Company are working according to extended 4, 6 and 8-year operation and repair cycles.

Eighteen vessels of the "Leninskaya Gvardiya" type, which represent the basic core of the shipping company's transport fleet, worked as of 1976 according to an 8-year operation and repair cycle, 14 of them have already completed work according to this cycle, have undergone their first plant overhaul since being built and currently are operating according to a 4-year cycle. All of these vessels are in good technical condition. The actual annual economic effect from work of the 18 "Leninskaya Gvardiya" type vessels according to an 8-year operation and repair cycle amounted to R1,098,000 (instead of R655,200 according to a preliminary calculation).

Also directed toward reducing the repair time and hard physical labor and economizing critical materials and manpower and financial resources are measures such as mastering the technology of repairing vessel hull structures with adhesives by using fiberglass, plasma hard-facing of high-strength alloys on engine valves and introducing new synthetic materials: (kaprolon) stern bearings, synthetic stuffing-box packings, Kormutan rust rectifier, liquid fillers and others. In 1982, more than 600 kg of Sprut-5MDI adhesive was used in an experimental order to repair decks and bulkheads on the motorships "Mga," "Vera Lebedeva" and "Andrey Andreyev;" the economic effect amounted to R17,200. In 1983, 100 kg of GIPK liquid fillers were introduced and utilization of the Sprut and Sprut-8r adhesives was begun in 1984. Utilization of synthetic adhesives could be expanded if centralized supply is organized in the Ministry of the Maritime Fleet.

In cooperation with the Odessa Technological Institute of Refrigeration Industry, the shipping company is introducing a method of mechanized cleaning of fuel tanks with the use of a cleansing agent on the basis of polyacrylamide. Experimental washing of tanks on three "Leninskaya Gvardiya" type vessels has shown good results: the share of manual labor was reduced to one-third--one fourth and involved only relocating the washing apparatus. The economic effect from introducing this method on the three vessels amounted to R6,300. Introduction of this tank washing method will be continued in the shipping company. This is not the only example of the shipping company's cooperation with scientific and planning organizations. In cooperation with the Leningrad Central Planning and Design Bureau, the shipping company is solving on electronic computers problems of collision-survivability, seaworthiness and other questions of ship theory, and with the Baltic Planning and Design Bureau and other organizations is developing and introducing permissible wear norms of vessel hull structures. In introducing scientific and technical research and developments, the Estonian Shipping Company is cooperating with 22 scientific research institutes and their affiliates and planning and design organizations and higher educational institutions of the Ministry of the Maritime Fleet and other departments.

In accordance with new technology plans, new and more improved means of communication and electrical navigation are being installed on vessels of the shipping company and measures on environmental protection, efficient utilization and saving of fuel and lubricants, automated production control tasks and electronic computer technology are being introduced. The shipping company has worked out a draft of a directed comprehensive program aimed at reducing the use of manual labor. A comprehensive production and labor quality control system is being developed: by the end of the first half of 1984, the shipping

company developed and introduced 20 enterprise standards, including the basic standard. Some standards are in the process of being developed and introduced. Being introduced also are measures connected with construction at the Loksa SRZ [Ship Repair Plant] of lighters for a lighter system as well as the construction of the Novotallinn deepwater port for receiving and processing of large cargo capacity vessels.

The economic effect being obtained from introduction in the shipping company and at enterprises and organizations under its jurisdiction of measures of new technology plans amounts to more than R2 million annually.

A great contribution to scientific and technical progress is being made by efficiency experts and inventors of the shipping company, innovators and leading production workers and leading specialists of the shipping company, the port and the plant. Utilization of most valuable efficiency recommendations and important inventions is included in the shipping company's new technology plan.

Thus, the efficiency recommendation on increasing the capacity of hold No 1 of "Leninskaya Gvardiya" type vessels was introduced on 18 vessels of this type and yielded a saving of R370,000. Utilization of the domestic Chistra preparation for continuous cleaning of the ship diesels' exhaust path without withdrawing them from operation has eliminated the need of disassembling an engine during engine cleaning. As a result of using such preparation, R128,700 in savings were obtained. Replacement of foreign built deck-mounted cargo cranes on "Leninskaya Gvardiya" type vessels with more reliable domestic cranes of the KEG-18 type has yielded savings of R9,300.

Much attention is being devoted in the shipping company to economizing material, financial and labor expenditures. Ship crews and collectives of coastal enterprises are participating in the all-union public review of efficiency in the use of raw materials, materials and fuel and energy resources. As a result of introduction in 1983 of some heat engineering and organizational measures, economical speed conditions of vessels, efficient grades of fuel, underwater cleaning of hulls during periods between regular dockings, continuous cleaning of the cylinder-bearing group of main engines and modernization of the main and auxiliary engines' cooling system of the "Spartak" type vessels for the purpose of using the heat for heating ship quarters, the fleet of the shipping company has achieved fuel savings of 4.7 percent by the operational meter and 3.1 percent by the technical meter. The saving of lubricants amounted to 3.7 percent of the established norms. In 1983, the fleet of the Estonian Shipping Company has worked 6.5 "underway" days on the fuel it has saved. Coastal enterprises of the shipping company have saved 446,600 kW-hours of electric energy during the year, which made it possible for them to work 7-8 work shifts on the saved fuel. Altogether R878,500 worth of material and energy resources were saved during the year.

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MAITIME AND RIVER FLEETS

VARIOUS OBSTACLES HINDER RIVER TRANSPORT OF FRUIT, VEGETABLES

Moscow VODNYI TRANSPORT in Russian 11 Nov 84 p 2

[Article by Ye. Luzhnov, chief of the Astrakhan port: "Vegetable Carrier with a Problem. From a Design to Introduction"]

[Text] It is the second year since specialized vegetable-hauling vessels, construction of which began in fulfillment of the country's Food Program, have started transporting production. The interdepartmental commission, which was formed by three ministries--the ministries of the shipbuilding industry, the fruit and vegetable industry and the river fleet--is conducting thorough tests of fundamentally new motorships on the river. For the first time in practical experience, Astrakhan tomatoes are being transported by them to industrial centers in containers.

However, the program of experimental shipments, as has already been noted by the newspaper more than once, is not being fulfilled in full volume and, quite frankly, not as smoothly as planned. What is more, some circumstances have seriously complicated objective verification of the advantages of vegetable carriers. It is known that motorships of two designs--R-168 and 19620--are undergoing tests.

The latter's main distinction is the existence of industrial air conditioning systems (STKV) in holds, which make it possible to create an artificial microclimate in them. Comparative shipments in the vegetable carriers of both designs of increased ripeness tomatoes--brown and pink--were called upon to reveal some or other advantages of the vessels and to substantiate if there is an economic inadvisability of equipping the motorships with expensive STKV. But contrary to intentions, the comparative runs did not come about.

Life, as they say, has introduced its own changes: the shipment of increased ripeness tomatoes to vegetable carriers turned out to be too much for farms of Astrakhan Oblast. It became clear that it is one thing to collect several tens of tons of fruit, which is almost ready for use, for hauling in refrigerated trucks, but an entirely another matter to form from them even one ship consignment, in which calculation is done in hundreds of tons. For this a desire and strong-willed methods are simply not enough, it is necessary to radically reexamine at vegetable plantations the technology, which has been firmly established over dozens of years, of growing and collecting the so-called milk tomatoes, which reach the necessary condition in the holds of dry cargo river vessels during the long voyage from regions in the lower reaches of Volga.

There is no denying that the idea itself of delivering tomatoes of increased ripeness, which, as specialists believe, get more nutritive and gustatory qualities standing, is tempting. The problem is in something else--how does this good idea correspond to the realities of everyday life?

This is not an idle question. Given the enormous scale of the All-Russian vegetable garden, the deliveries in refrigerated trucks beyond the boundaries of the oblast are quite insignificant and are restrained, incidentally, owing to the same reason--because the products of increased ripeness are collected in comparatively small volumes. It is not ruled out that traditional technology of hauling milk tomatoes remains as the most acceptable and the only expedient one for river vessels in the foreseeable future. The incomparably large and ever increasing volumes of fruit and vegetable deliveries by waterways cannot be ruled out. One way or another, but there is no definitive clarity in this question.

In the meantime, construction of vegetable carriers with industrial air conditioning systems is already underway, whereas the motorships of design R-168 (I would like to recall that design 19620 was developed on its basis) are being built only at the expense of internal and extremely modest resources of the Volga Shipping Company alone. It is time for the USSR Gosplan to take a closer look at this, to say it frankly, ambiguous situation. Obvious haste, running ahead is evident. The problem, as they say, is positioned upside down. Vegetable carriers with industrial air conditioning systems have been started as a series, while their need and efficiency still has to be proven.

An undisguised speeding up of events has created a paradoxical distortion. As the things are going, the vegetable carriers which have already been built are being adapted to hauling Astrakhan tomatoes. But we were unable to compare them in hauling vegetables of increased ripeness. So what happened? Now the main stake has been placed on hauling under autumn conditions. The STKV's, they say, will justify themselves and show their advantages.

However, the line of reasoning by the supporters of this point of view is already vulnerable in the way the question itself is put, because to maintain increased temperatures in holds it would have been possible to get along with, let us say, much cheaper air heaters. But is there a need to do even this, if it is already warmer in the hold than outside the vessel owing to the difference in temperatures of water and outdoor air?

The fact that losses of vegetables in autumn on their way from the field to the consumer do not occur in vessel holds is also no secret for practical persons. The quality of shipped vegetables declines on its own in autumn. They spoil during unloading in receiving ports and hauling to stores and trade bases under conditions of low and sometimes negative temperatures. That is where the channels of losses should be closed.

Once in a while statements about the effective action of industrial air conditioning systems appear in the press. In the meantime, the indepartmental commission, without having in its hands appropriate and indisputable facts and evidence, is extremely restrained and careful in conclusions.

It seems that this is not accidental. No offense is meant, but some specialists, as they say, were led into such temptation by the possibility of creating an artificial microclimate in holds, that voluntarily or not they do not note the most important thing--the container. For the first time an opportunity was available for shipping Astrakhan tomatoes as an experiment, not only in box trays made of thin planks, which, as calculated, are transshipped more than 10 times on the way from the field to counter, but under a reliable protection from losses which is provided by a container. Obviously the advantages of shipping vegetables in containers cannot be attributed without any grounds to STKV.

It is strange, but it is a fact: the container remains in a shadow. As though it has been forgotten that the vegetable carriers which are being built are, first of all, containerships. The ministries of the fruit and vegetable industry of the RSFSR and the USSR have failed to ensure the delivery to berths in Astrakhan of TKB-90U general-purpose vegetable containers. If there was no prompt assistance from the Minrechflot [Ministry of the River Fleet], which partially made up for their acute shortage with wooden pallets, then experimental shipment of tomatoes in vegetable carriers would have been completely frustrated.

The TKB-90U container was sharply and justly criticized in VT [VODNYY TRANSPORT]. Owing to the imperfect design (and also poor quality of manufacture), the assembly of these containers and packing trays with tomatoes in them is such a demanding, if not, an agonizing process for shippers of the harvest that it is capable of completely killing the interest in containerization. If one is to face the truth, then without fail it is high time not only to have a design of an appropriate general-purpose container, which is equally suitable for shipping vegetables as well as watermelons, but it is also time to be concerned about its mass production and allocation of necessary production areas for this purpose. Otherwise the millions of state funds which are invested in the construction of vegetable carriers will be unable to yield a return. Containerships are left without containers. I would like to draw attention of the Gosplan, the Gossnab and the USSR Minplodoovoshchtorg [Ministry of the Fruit and Vegetable Industry] to this alarming fact.

The following circumstance also cannot be anything else but disturbing. Modern mechanized berths are being constructed slowly in Astrakhan Oblast. Thus far the coast of the All-Russian vegetable garden is poorly adapted to receiving vegetable carriers, a large number of berths (there are more than 40 of them) available to shippers today are unable to receive containerships and to work with containers.

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MARITIME AND RIVER FLEETS

EARLY COMPLETION PLANNED FOR NUCLEAR-POWERED ICEBREAKER

Leningrad LENINGRADSKAYA PRAVDA in Russian 21 Dec 84 p 1

[Unattributed article: "The Baltic Shipyard"]

[Text] Competing under the slogan "All growth in production volume results from technical progress, maximum equipment load and resource conservation," shipbuilders will surpass planned production by a million rubles and increase production volume for the five-year plan by 35.4 percent -- 5.4 percent above the goal.

The collective will ensure all growth in production volume by increasing labor productivity, will overfulfill the directives by 1.2 percent and achieve the level of labor productivity stipulated in the five-year plan by July of 1985. The above-plan production cost reduction will reach 0.6 percent, and extra profit will exceed 200,000 rubles. Shipbuilders will work for two days on conserved materials and energy.

Construction of the nuclear-powered icebreaker Rossiya is slated for completion 14 months before deadline, by the 68th anniversary of the October Revolution.

Carrying out the "Intensification-90" program, Baltic shipbuilders will establish four integrated mechanized sections and an automated production line for consumer goods, and will introduce 70 units of new industrial equipment, including four stands with numerical program control, six automated and semiautomated stands and three industrial robots. They will implement 12 new technological processes and reduce the number of workers engaged in manual labor to 35 percent.

The experimental introduction of the brigade (collective) contract method is scheduled for a single shop and in the sections producing consumer goods. To increase fixed capital, 6,000 square meters of productive capacity is scheduled to be put into operation.

Carrying out the integrated plan for economic and social development of the collective, shipbuilders are investing into this effort much that will help them achieve new labor heights and improve production and living conditions in the coming year. They are making a major contribution to fulfilling the Food Program.

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MARITIME AND RIVER FLEETS

SHALLOW-DRAFT ICEBREAKER URGED FOR VOLGA-DON SHIPPERS

Moscow VODNYY TRANSPORT in Russian 24 Nov 84 p 2

[Article by B. Blizgarev, senior inspector-captain of the Don-Kuban Basin shipping inspectorate and VODNYY TRANSPORT stringer: "The Scarce Icebreaker"]

[Text] For several years Don rivermen have been working an extended navigation season on the lower Don and Sea of Azov. They are transporting additional hundreds of thousands of tons of cargo. But the results could be significantly better. Above all, this requires a high-powered, shallow-draft icebreaker on the river.

In the beginning of October of this year, the chief of the Volga-Don Shipping Company, Yu. Zakharov, approved measures to ensure safe sailing during extended navigation. The document covers a wide range of problems related to motorship operation in severe winter conditions. Unfortunately, these measures cannot replace an icebreaker, so they necessitate making allowances for even the slightest freezing and for low-powered escort tugs. Therefore, it became necessary to prohibit navigation of Bol'shaya Volga-, Kaliningrad- and Volgo-Don-class vessels in Taganrog Bay when ice is forming. Combined river-sea ships are permitted to sail independently in brash, but only with an icebreaker escort if there are ice fields. For these purposes there is the low-powered Ozernyy.

It should be remembered that ice navigation on the Tsimlyansk Reservoir presupposes use of an icebreaking attachment, which has proved its worth more than once. But it is of little use on the Sea of Azov. The Ozernyy's power has sometimes been ineffective -- it has become iced in along with the attachment.

The Volga icebreaker Volga somehow spent the winter in the Don Basin. It easily handled its assignments within the limits of the inland transit route. But it was completely unprepared to sail in coastal and sea conditions. It did not have the permission of the RSFSR River Registry, the appropriate equipment or specialists with sea papers. As we see, the first attempt did not get far. In fact, why not begin to open up inland shipping lanes in spring, starting from the southernmost point? We can and must leave a "bogatyry" on the Don in winter. Let it labor there until spring.

The question of a high-powered, shallow-draft icebreaker for the Volga-Don Shipping Company has been before the RSFSR Ministry of the River Fleet for several years -- in meetings and in the press. However, it is not being resolved. An

icebreaker has not been released even for temporary use (in winter). But the demand for it is increasing also because a repair and maintenance yard for the combined seagoing-river ships of central river shipping companies is being established in Temryuk. It is quite possible that, when the base is ready to receive motorships for servicing, they will not be able to reach it because of ice.

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MARITIME AND RIVER FLEETS

USSR ORDERS LARGEST OIL RECOVERY BARGE, FLOATING CRANE

Moscow RECHNOY FLOT in Russian No 10, Oct 84 p 42

[Article: "Technical Information -- Contract Signed"]

[Text] The V/O Sudoimport [Ship Import Foreign Trade Organization] and the Wartsila Corporation in Finland signed a contract to deliver the USSR the world's largest oil recovery vessel-hydraulic dredge and a floating crane.

The vessel is intended for the prevention of water pollution from spills of oil and petroleum products, fire prevention work at oil fields, and for the collection, processing and transporting of waste waters from oil drilling platforms. The vessel will be equipped with plastic floating barriers which can assist in collecting oil from the surface out to 60 meters. This can be expanded to 250 meters if two other vessels are used to stretch it out. The capacity of the recovery vessel is 10,000 m³, and its oil pumping rate is 800 m³/hour.

In addition to this, the vessel can be used as a hydraulic dredge for underwater oil fields. A dragging bucket and an underwater pump block can work to a depth of 50 m. The capacity of the pumps is 2x1,300 m³/hour.

It is intended to equip the vessel with an apparatus for determining the relief of a wide area of sea bottom. To improve its maneuverability the vessel will have two variable pitch propellers in housings and two bow thrusters. This oil recovery vessel-dredge will meet all demands made upon tankers.

Basic Specifications

Length, overall, meters	132
Length on waterline, m	126
Beam, m	22
Draft, m	8.5
This vessel will be delivered in 1986.	

The 600 ton capacity floating crane is a continuation of a series of previously ordered ships. It is intended for the movement of large equipment and erection work in the development of oil and gas fields in the Caspian Sea, where it will be delivered unassembled from Turku. Soviet and Finnish specialists will assemble it there.

The plans call for the floating crane to be able to work in various weather conditions from -30°C to +40°C.

Basic Specifications

Length, overall, meters	141.4
Length on waterline	121.75
Beam, m	54.00
Draft, m	4.00
Boom operating radius, m	40.00
Speed, knots	10.7
Rating of main engines (three Wartsila Waasa, 6R32's) kW	5725

The floating crane will be delivered in 1986.

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CSO: 1829/115

MARITIME AND RIVER FLEETS

BRIEFS

LAYSKIY SHIPYARD SUCCESSES--Arkhangelsk, 3 Dec--Shipbuilders at the Layskiy Ship Repair Yard of the Northern Shipping Company have begun the construction of a new type of air cushion platform. A new section for the construction of towed pontoons was built this year at the yard. These pontoons are widely used for hauling arctic freight and unloading it at unequipped beaches. The shipbuilders were considerably ahead of schedule in assembling the pontoons. The yard's dock is also used to repair sea-going ships. Work is rapidly under way. The use of progressive methods and the yard's course in the direction of technical progress are factors in the collective's success. [By PRAVDA stringer N. Golitsyn] [Text] [Moscow PRAVDA in Russian 4 Dec 84 p 2] 11574

OIL TANKER FOR CASPIAN--(AZERINFORM)--A tanker bearing the name of the Baku resident Pavel Dmitriyevich Osipov, Hero of the Soviet Union, has been added to the tanker fleet of the Caspian Shipping Company. Built at Volgograd, the new ship can haul 4,600 tons of oil and petroleum products. [Text] [Baku VYSHKA in Russian 11 Dec 84 p 1] 11574

DRY CARGO SHIP LAUNCHED--(TASS)--Shipbuilders at the Krasnoye Sormovo Yard have launched a new dry-cargo ship. The river-sea type diesel-powered ship has a capacity of 3,000 tons. It was completed considerably ahead of normed schedules through the precise coordination of brigades. In December the Sormovskiy-50, as the ship is called, undergoes mooring tests in the yard's harbor. In its captain's cabin is a gold emblem of State Quality. The ship is to be sent on its first voyage after the first spring floods. [Text] [Moscow VODNYI TRANSPORT in Russian 13 Dec 84 p 1] 11574

SAIMAA CANAL USE GROWING--More than 1,200,000 tons of freight have already been shipped this year on the Saimaa Canal, which is rightly called the "water artery of friendship." The flow of freight and passengers hauled on this canal is growing yearly. The joint operation of the water route is one of the specific examples of good-neighborliness and mutually advantageous cooperation between the Soviet Union and Finland. According to preliminary estimates, the total amount of freight hauled on this canal in 1984 will exceed 1.3 million tons. In comparison, recall that in 1971 only a little more than 100,000 tons were hauled. The route's importance is constantly growing in connection with the stable expansion of bilateral trade and economic relations. Saimaa Lines Limited, a joint Soviet-Finnish stock company, is delivering freight to industrial enterprises in both countries, and engaged in transit hauls from the Baltic and North Sea to Japan. [Text] [Moscow VODNYI TRANSPORT in Russian 27 Dec 84 p 1] 11574

NEW NORTHERN PORTS DREDGE--The support fleet of the Northern Shipping Company has been augmented by the dredge Severnaya Dvina. The new, multibucket dredge is distinguished from its predecessors by more electronics and automation. It will be employed in dredging operations in northern ports -- Murmansk, Dudinka and Arkhangelsk. [By A. Gundorov] [Text] [Moscow VODNYI TRANSPORT in Russian 29 Dec 84 p 1] 11574

CSO: 1829/100

PORTS AND TRANSSHIPMENT CENTERS

OFFICIAL FINDINGS IN MAGADAN PORT PROBLEMS INVESTIGATION

Moscow MORSKOY FLOT in Russian No 11, Nov 84 p 16

[Article: "Problems of the Magadan Port"]

[Text] The editorial office received a letter from Secretary of the CPSU Magadan Obkom [oblast party committee] A. Bogdanov which reported that an article by M. Kurnosov, published in the periodical (MORSKOY FLOT No 12, 1983) on the obkom's recommendation was examined at the coordination council of the Magadan Transport Center. The proposals prepared by the council on this subject in March 1984 were discussed at the oblast party committee with the participation of responsible workers of USSR Gossnab [State Committee for Material and Technical Supply], the Ministry of the Maritime Fleet and the RSFSR Ministry of Motor Transport.

The basic proposals made by the coordination council of the Magadan Transport Center are set forth below.

Among the problems mentioned by members of the transport center, the poor quality of the shipping documents compiled at the shipping ports and the lack of correspondence with the load in the holds of the transport vessels held first place. The problem, it would appear, is not complex, and does not require special capital expenditures to establish the proper procedure. At the same time, this problem is unsolved, which continues to have a very adverse ethical and material effect on all the participants in the transport process.

For example, most of the cargoes arrive at Magadan from Vanino and Nakhodka via a direct, combined railroad-sea route. Therefore, the quality of the shipping documents compiled at the consignment ports (Vanino and Nakhodka) is of decisive importance for the Magadan port workers. At the same time, the constant lack of correspondence between the hatch records and the actual disposition of the cargoes in the vessels' holds is the present plague of the Magadan port workers. As is known, the hatch record is the basic, original document for compilation of the daily-shift work plan of the transport center. If the hatch records are filled out inefficiently, this leads to a disruption in the schedule for processing the vessels, condemns the vessels and motor

transport to idle time, makes processing the freight documents more difficult and obliges settlements with the consignees to be made 10-15 days after the port has paid the shipowner the expenditures to ship the cargo and transship it to the consignment port. For the Magadan port, these sums reach 100,000-200,000 rubles for each vessel, and in the end the port is often deprived of considerable funds to pay the bank credit.

The poorly compiled hatch records at Nakhodka have a direct effect on the labor productivity of the Magadan port workers, and force the means of transport to idle time, to the detriment of the state.

These problems can be solved by raising the exactingness for the persons who make out the shipping documents at the ports shipping the cargo, as well as by developing, with the aid of an electronic computer, efficient information on the arrival of the cargoes and their arrangement by holds until the vessels' arrival at Magadan.

Packeting and containerizing the grain products arriving at Magadan remains a problem, as before. Every year, 100,000 tons of food goods (not counting vegetables) arrive unpacked. In addition, the packing and packaging often do not conform to GOST [All-Union State Standard]. The containers, particularly those with grain products, are unsatisfactorily marked, which leads to extra sorting and makes it necessary to reload the contents from container to container, i.e., the whole sense of containerization is lost.

Although the Magadan Transport Center was formed over five years ago, there are still no coordinated standardized documents determining the procedure for receiving and transferring freight using the system vessel-port-motor transport-consignee.

For example, the standardized documents of the Ministry of the Maritime Fleet specify fines to the motor vehicle drivers for storing goods in warehouses, thus make it necessary for means of transport to be provided primarily to haul the goods from the warehouses, and not from shipside. It is therefore not by chance that the most economically advantageous work, in accordance with the direct method "vessel-motor vehicle" has not been properly developed here.

The standardized documents of the Ministry of the Maritime Fleet daily determine the transport of a number of goods for each consignee. Actually, however, the goods often arrive at the address of only one or two recipients, in the amount of quarterly or even half-year resources. A total of 89 consignees--a paradox! Some 87 consignees have the right to freight transport, but have none, while two addressees do not have the physical possibility of transporting goods, since very few motor vehicles are released to them.

Moreover, the technology of the freight work at the port and at the consignees' bases are at different levels of technical development. Only five bases of the consignees have been to the slightest degree mechanized, and therefore the bases are not in a position to set up processing methods for the materials handling work, unified with the port.

Everything that comes to the bases controlling packeting and containerizing of grain products is separated manually. The above-norm idle times of the motor vehicle transport at these bases are over 5000 hours yearly. The matter is complicated even more by the fact that the resolution of USSR Gossnab on consolidating the addresses of the consignees is not being carried out. Instead of the 89 authorized addresses, goods continue to go to over 140 addresses, of which only 19 are in a position to receive goods on a 24-hour basis.

Every year, more than 1300 times, clients refuse to accept the goods sent to them, preferring to pay huge fines to store them in the port warehouses.

Therefore, the disproportion in development of the production base of related enterprises of the transport center and consignees is still one of the reasons why it is impossible to organize coordinated work of the participants in the transport process.

The proposals for improving the work of the transport center, signed by G. Myasnikov, chief of the Magadan port, V. Timakov, chief of the Magadanavtotrans Association, and V. Klimov, chief of the Magadan Production Motor Transport Association, also point out the need to reinforce the production base and to complete the staff of the Magadan Production Motor Transport Association, as well as to eliminate the serious lacks in development of the port's production-technical base and to construct objects for a social and cultural everyday life, apartment houses and dormitories.

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PORTS AND TRANSSHIPMENT CENTERS

NEW FACILITIES OPERATIONAL AT RENI PORT ON DANUBE

Moscow VODNYI TRANSPORT in Russian 22 Dec 84 p 1

[Article by VODNYI TRANSPORT special correspondent A. Bondareva:
"A Second Birth"]

[Text] The first section in modernization of the oldest port on the Danube--Reni--has been completed.

On 20 December 1984 the state commission accepted a new transshipment complex at Reni, built with the participation of Yugoslav firms. Present at the opening were Yu.I. Krayev, deputy chief of the division of transport and communications of the Administration of Affairs of the USSR Council of Ministers, V.V. Aristarkhov, chairman of the V/O [All-Union Association] Morstroyzagranpostavka and chairmen of the firms participating in the construction.

V.V. Pilipenko, chief of the Soviet Danube Shipping Company, V.M. Shelest, chief of the Reni port, and others spoke at the ceremonial opening.

The motorship "Yuriy Krymov" was the first to be unloaded at the berth of the new complex.

The Danube, if one may say so, is the main commercial avenue of Europe, which makes it possible for many countries to have an exit to the sea. Suffice to say that half of the foreign trade cargoes of the CEMA member countries are transported by the fleet of the Soviet Danube Shipping Company.

The vessels' routes from Reni run to 30 ports on the Danube and the Black and Mediterranean seas. Ships under the flags of 25 countries of the world visit it. In a year the port workers process 25,000 vessels and 100,000 railroad cars, and the freight turnover has exceeded 13 million tons. Today Reni has entered the list of the country's 10 largest ports and as a certitude holds sixth place.

The port's existing capacities, warehouse facilities and technical equipment, however, have clearly lagged behind the increasing cargo flow. Only thorough reconstruction could solve this problem. On 5 May 1983 this reconstruction

was begun by the Yugoslav business association, Generaleksport, which came forward as general contractor. The construction volume was very large: four transshipment complexes to process general cargoes, with a capacity of almost a million tons a year. The subcontracting organizations and the Ivan Milutinovich firm (PIM) [not further identified] carried out all the hydrotechnical work. Some 1300 piles were driven in and 300 linear meters of berth have been constructed from the Danube side for marine vessels, and 210--from the sheltered inlet side for river barges. Specialists of the Ratko Mitrovich firm have taken on the construction of all the utility facilities--ATC[automatic telephone station], every-day facilities for 650 persons and a 300-apartment building for specialists at the port and others.

The port construction workers, who in this period had to utilize 2 million rubles, are also making their contribution to the reconstruction. This is the reconstruction of the main boiler house, laying new engineering routes and other work, which permit the port, as a complex engineering mechanism, to solve long imminent problems of water, heat and electric supply.

The construction workers and port workers were obliged to work under complicated conditions. In July of last year and in March of this year, due to the high water level of the Danube, in the area of the 18th berth, large pieces of the already alluviated berths were washed away. For three months in the winter of 1983, the construction was feverish due to the insufficient supplies of building structures. The fact is, that all the structures and items for it, under the conditions of the contract, were manufactured at plants in Belgrade, and arrived at Reni by Yugoslav ships and barges of the Soviet Danube Shipping Company. In the winter the level of the Danube was so low that even the shallow draft barges could not approach the Reni berths when they were loaded. The mutual assistance and mutual understanding of the Soviet and Yugoslav specialists, however, helped in the course of construction not being stopped for even a minute.

It must be said that this atmosphere reigned at the construction site for the entire 20 months. During the heaviest downpours, when the protecting levees were broken through and the water could flood the pump station for the city's water supply, the Yugoslav construction workers, shoulder to shoulder with the Soviets, worked in the pouring rain until the threat of flooding was fully eliminated.

Construction of the first section is completed. The construction workers are turning over their work "under contract". The vast enclosed warehouse covers 6000 square meters and three open storage areas cover 10,000 square meters; 14 powerful gantry cranes have been set up at the berths and are ready for work; and there is an elegant (in other words, simply nothing like it) building for everyday facilities, striking for the modesty of the exterior and interior finishing, simple, laid out with concrete slabs of the site of the berths and flowers. Now it is winter, and there are only perennial plants on the grass plots, but with the approach of spring, the berths will begin to bloom with all the colors of bright southern flora.

Just how did the reconstruction carried out affect the work of the port itself? Naturally, this construction work cannot help but give rise to additional difficulties. The people, however, distinctly pictured the prospect, and they literally "laid themselves out" so that the rates of the freight operations should not be reduced. Last year the collective was twice awarded prize-winning places in the All-Union socialist competition. This year, as well, there is no reduction in the rates. The plan for cargo processing was fulfilled by 106.5 percent in the first quarter and the non-productive idle time for the fleet was reduced by 38 percent. The result--first place in socialist competition for the sector. Good work was noted for the port workers in the second and third quarters. Brigades under the direction of M. Dolganyuk, N. Orekhov, L. Shcherba, N. Myrze and A. Angelopolo are doing excellent work. As early as August they completed the assignment for four years of the five-year plan. Three of them--the brigades of Orekhov, Dolganyuk and Shcherba--by the 67th anniversary of the Great October Revolution successfully coped with the year's plan.

"We can and wish to go forward more quickly," said K.U. Chernenko. "We can and should solve the problems of intensive development of the economic system much more energetically." These words of the General Secretary of the CPSU Central Committee became the work motto for the collective of the Reni commercial port.

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PORTS AND TRANSSHIPMENT CENTERS

GROWTH, PROBLEMS OF OPERATIONS AT PETROZAVODSK PORT

Moscow VODNYY TRANSPORT in Russian 25 Dec 84 p 2

[Article by A. Koronen, senior technologist of the Petrozavodsk Port: "See into the Future"]

[Text] In the last ten years, the volumes of loading and unloading work and the intensiveness of fleet processing at the Petrozavodsk port have almost doubled. At the beginning of the 1950's, 60,000 tons of cargo were processed during the navigational period and this is equal to the amount now handled in two days.

In cooperation with related workers--railroad men and vehicle drivers--the new freight flows here are being coped with on a wide-scale basis, obsolete systems are being improved and new industrial processes to handle ships, railroad cars and motor vehicles are being introduced. The level of comprehensive mechanization for the most labor-intensive packaged-piece goods is 97 percent today. With the advent of bagged goods in sling containers, there has been success in mechanizing heavy manual labor, not only when processing the vessels, but also in loading motor vehicles.

With the introduction of special containers to transport potatoes, work was mechanized to process the vessels and motor vehicle transport, and the best preservation of the tubers at delivery is ensured. A further improvement in the technology will be implemented due to the introduction of more durable and capacious TKB-90U containers. This makes it possible to dispense with manual labor when transshipping not only potatoes, but also tomatoes.

Port specialists are thoughtfully studying and efficiently introducing the positive experience not only of the river but also of the marine ports where the White Sea-Onega Shipping Company vessels stop off. For example, with the introduction of lobe grabs, formerly used only in Baltic ports, it was possible to release bulldozers and excavators to load stone on the vessel and create safer work conditions. Hold operations are also mechanized with the aid of small tractors.

During this five-year plan we have developed the transport of paper by water from Karelia to Moscow and Leningrad, Riga and Tallinn, as well as to the

German Democratic Republic. Quite recently our port's fleet was augmented by two container ships, built by the Roslau shipbuilders (GDR). The relatively small load capacity (1300 tons) had a positive effect on both the loading and unloading of the paper.

In the concluding year of the five-year plan, the navigation volumes of paper transport from Kondopoga will reach 100,000 tons, and will thus succeed in freeing about 3000 railroad cars to transport other freight from Karelia to our country's central regions.

We have, however, no small number of unsolved problems. For example, the problems of supplying the berths at the destinations with additional storage and frontal and rear mechanization await solution. This pertains above all to the Moscow Northern Port, where the vessels of the White Sea-Onega Shipping Company stand idle in the autumn navigational period, converted into floating warehouses for temporary storage of paper.

Our port is constantly supplemented with modern hoisting-transport machines with a large load capacity, and the product list of cargo being processed is expanded. Due to the lack of the proper gripping devices and hold mechanization, however, the load lifter cranes are often by no means fully used, which holds back a further growth in intensiveness of processing the means of transport.

There are no workshops at the port. There is therefore no possibility of producing even the simplest clamps approved at other ports. That is why ordinary slings must so often be used in transferring metal in packets and in rolls, bundles and sheets. Even acquiring cargo hooks and clamps has become a problem.

Many valuable innovations could be incorporated so quickly, there could be such a savings in means and materials, if a centralized procedure could be set up to manufacture the simplest gripping devices at the industrial enterprises of the RSFSR Ministry of the River Fleet!

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PORTS AND TRANSSHIPMENT CENTERS

OFFICIALS SEEK IMPROVED OSETROVO PORT OPERATIONS

Moscow VODNYY TRANSPORT in Russian 25 Dec 84 p 3

[Article by V. Mineyev, chief of the Lena United River Shipping Company, V. Tokmakov, chief of the TsPKB MRF [Ministry of the River Fleet Central Planning and Design Bureau] and M. Sorokin, department head at NIIVT [Novosibirsk Institute of Water Transport Engineering], candidate of technical sciences: "Northern Cooperation"]

[Text] The combined efforts of the Lena United River Shipping Company, the TsPKB of the Ministry of the River Fleet and the NIIVT are giving a noticeable boost to the level of comprehensive mechanization at one of the main transport centers of the Far North--the Osetrovo river port.

It is known that the considerable volume of transport of the Lena United River Shipping Company are packaged piece goods (industrial and food commodities) for the enterprises and people of the Far North regions in the northeast of the country. The primary problem here is comprehensive mechanization and a reduction in the expenditure of manual labor in processing commodities for covered storage.

The whole trouble lies in the fact that, on the one hand, the sizes and types of packaged goods are already too varied. On the other hand, however, these types of goods are being sent off in small batches from practically all the regions in the country. This means that over 10,000 stations are sending them! In addition, the cargoes are going to mixed railroad-marine services with multiple reloadings from one type of transport to another. This is why everything is making the mechanization of commodity transfer exceedingly difficult. What does this lead to? It would appear, to long idle times for covered railroad cars awaiting transshipment during their mass arrival at transshipment ports.

Where then is the way out? Possibly the main way to solve the problem is the unification of type-sizes and consolidation of the places for these cargoes, and transition to door-to-door transport in containers, including large-tonnage ones and in through consignment packets. For this, however, the technological process of preparing a certain specific type of product should be completed by forming a transport packet, transshipped by mechanization for all types of cargoes.

The Lena United Shipping Company, in conjunction with the TsPKB and NIIVT, has been carrying out work in this direction for several years now. To put it briefly, the flows of piece goods are analyzed and the basic enterprise-freight-senders are examined in order to establish the possibilities of transferring them to shipping their products in containers and packets. Proposals are being developed to concentrate the freight flow to regions of the Far North at a limited number of enterprises which have the necessary conditions to convert to new technology. At the same time they are based on efficient types of packets and packaging devices, and tests, experimental and industrial-experimental transshipments are carried out. Special cargo-lifting devices are being developed for highly productive transshipment of packets.

Specifically, this work has been carried out for a group of piece goods, metal pipes with small and medium diameters, cement, and grain and forage goods in sacks, and boxed goods (tinned products) and others.

The most obvious creative collaboration between industrial workers, designers and scientists follows the example of the Osetrovo and Yakutsk ports, where the bulk and piece goods are general and characteristic. For example, between the Osetrovo port, the TsPKB and NIIVT close creative communications were established several years ago, when combined developments were made for the transition to through packet transport of goods, (heating radiators, fire brick, slate, plaster board etc.), which up until now had been transported to the regions of the Far North in closed cars with slight prepacking in expensive packing. The radiators, for example, were packed singly in wooden crates.

We developed consolidated packets for these goods, with a mass up to 5 tons (instead of 50 kilograms) in one-time packing. They began to be transported on open rolling stock.

The institute, in conjunction with the division of the chief technologist for the port, agreed with the consigners and managements of the railroad on the technical specifications to form and strengthen the packets on the railroad cars, and to transfer and transport them.

In the last few years, the division of the chief technologist at Osetrovo port has been reinforced. A test-experimental group was introduced into it, which includes the designers and highly skilled workers. This made it possible, in conjunction with specialists of the TsPKB, to develop and introduce in short periods a number of load-lifting and special devices to transfer piece goods. Larger pallets are used for intrabasin packet transfers, mainly new types of packets up to 5 tons in mass for various goods, and using wire slings and clamping devices for them. The work was done according to the principle of unified technology for the transfer processes at the transfer port and at the destinations.

It should be noted, however, that the transition to through packet transport is extremely delayed due to interdepartmental lack of coordination and the narrowly departmental approach of a number of consigning departments. Therefore, so far at the Osetrovo port less than 20 percent of the packaged piece goods, transported in closed cars, are in packet form, while all the remaining mass is by piece, just as before.

Under these conditions the workers at the Osetrovo port are forced to seek a way out of the situation that has formed there by packaging and mechanizing the transfer work both at their own port and in the ports receiving the goods.

An innovative group (Osetrovo port, TsPKB and NIIVT) introduced a proposal to develop a highly mechanized complex to transfer bagged goods at LORP [Lena United River Shipping Company]. The proposal was examined by the management of the shipping company and the TsPKB, and has been given support.

In 1984, TsPKB, in conjunction with LORP and NIIVT drew up, and Glavport of the MRF [Ministry of the River Fleet] approved "A Purposeful Comprehensive Program To Develop Technical Devices For Complete Mechanization of Transferring Goods in Sacks at the Osetrovo river port of LORP." It includes the development of mechanization to eliminate manual labor in loading operations, the use of new technology and introduction of a whole series of machines for ancillary production facilities, related to the manufacture of pallets, slings and other devices.

The most labor-intensive operations remain the manual removal of freight from closed cars and forming the packets at the ramps of the warehouses. According to data from calculations, the input of manual labor here constitutes over 80 percent of the total input.

It is not from a good life that the Osetrovo port workers (indeed, not only they, unfortunately) are forced to make almost manually about 100,000 pallets a year, and over 350,000 wire slings with an input of about 20,000 man-days. No end can be seen to this work, which is not properly for port workers, in the foreseeable future: most packaged piece goods will still arrive at the transfer port in closed cars with individual spaces.

Therefore, to raise the level of complete mechanization of the most labor-intensive operations and to ensure the growth of labor productivity, a highly mechanized transfer complex for bagged goods is being developed. Completion of its introduction is planned for 1987. The basic purpose of the complex is that of highly productive transferring, maximum reduction of manual labor and automated forming and further delivery of the goods to the freight receiver in transport packets within the basin.

The complicated nature of the complex can be judged from the fact that it includes 26 units of industrial nonstandard equipment and packaging devices, 11 of which have already been made and introduced.

The economic effect from introducing this innovation is about 1,800,000 rubles a year. Labor productivity at the transferring operations will increase by 36.8 percent, and at the same time 145 port workers will be released.

These figures are conditional and estimated. It is possible that they will be somewhat different, depending on the volumes of the freight flow. One thing, however, is clear and indisputable: the combined initiative of the port workers, designers and scientists, and their creative union and strong production ties will unquestionably yield a positive result for the joint work.

INTERSECTOR NETWORK DEVELOPMENT

CEMA TRANSPORTATION PLANNING THROUGH 2000

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN CHLENOV SEV in Russian No 8,
Aug 84 pp 39-42

[Article by Ryszard Stawrowski, CEMA Secretariat department chief: "Forecasting the Development of **T**ransportation Ties up to the Year 2000"; passages in capital letters printed in boldface/

[Text/ In the countries of the socialist community where, as a result of the deepening of inter-state production specialization and cooperation, the territorial sphere of integration processes is increasing, transportation is playing an ever-more important role in connection with the growth of freight hauls, the expansion and complication of their structure, etc. This is likewise to be explained by the locational characteristics of the fraternal countries and the distribution of their fuel, raw-material, and energy resources.

Transportation is confronted with large-scale, constantly more complicated tasks. There are still bottlenecks and shortcomings in its work, and measures are being taken to eliminate them. However, constant and considerable increase in the volume of hauls requires from the CEMA member-countries an improvement of their transportation work, above all, mainline operations and their surface forms--railroad, motor-vehicle, water, and pipeline.

The steadily deeper inter-action of the fraternal countries has brought qualitatively new problems to the fore, and it requires solutions which are new in principle in this field of cooperation. Planning is of the utmost importance; its first step is a scientifically grounded forecasting of developments. We must concern ourselves today with the transportation of tomorrow.

That is why a well-constructed system of cooperation in planning transportation activities was created and is functioning successfully within the framework of CEMA's Permanent Commission on Cooperation in the Field of Transportation. It encompasses the following phases of the operations: forecasting, coordinating long-term plans for the development of transportation, coordinating five-year plans, coordinating one-year plans. Along with this, effective consultations are held concerning the basic problems of transportation policy.

Precise functioning of complex cooperation in planning activity would be impossible without a system of observation, without a broad informational and statistical base. It is precisely such control which allows us to discover difficulties which arise and to outline measures for eliminating them.

Forecasts of the development of international hauls between CEMA member countries as far as the year 2000 have recently been worked out within the framework of CEMA's Permanent Commission on Cooperation in the Field of Transportation. These forecasts deal with the following matters: volumes of freight and passenger hauls in international transportation between the CEMA member-countries; the technical development of transportation (in accordance with its various types), as well as the condition of the highways; transportation's needs for the basic technical means, materials, and energy.

According to the forecast, in 2000 the volume of freight hauls will have grown by 25--26 percent, as compared with 1980. Analysis of these data and the distribution of hauls throughout the CEMA member-countries has allowed us to draw the following two important conclusions. In the first place, a tendency will be manifested toward a slow-down in the growth of the total volume of hauls by five-year plans, to be more precise, as follows: in 1980--1985 it will amount to 16 percent, in 1985--1990--to 4 percent, in 1990--1995--to 2 percent, and in 1995--2000--to 1 percent (according to data from a number of countries). In the second place, a more intensive growth is anticipated with regard to export hauls from those CEMA member-countries which are less developed from an economic point of view. As it is not difficult to note, both tendencies are conditioned by structural shifts in the national economies of the CEMA member-countries and in their mutual economic ties.

A certain redistribution of the shares of participation by the CEMA member-countries in reciprocal export hauls is to be explained by a number of economic causes. Here it must be borne in mind, above all, that intensification of the efforts by the CEMA member-countries for the purpose of increasing effectiveness in utilizing fuel and raw-material resources has stimulated the introduction of technologies which reduce the proportionate consumption of raw materials and fuel. At the same time the countries are developing, to an ever-increasing degree, their own fuel-energy and raw-material resources; they are closing the gap between the preliminary processing and enrichment of raw materials, fuel, as well as between material- and energy-consuming production facilities and the sites where the corresponding materials and energy sources are extracted. At the same time, within the framework of the deepening socialist division of labor, there is an increasingly deeper processing of secondary materials, and this is leading to an expansion of the mutual exchange of products with a relatively small specific mass.

The results of the forecast of the distribution of freight hauls are cited in Table 1.

As may be seen from the table, the proportion of railroad transport within the mutual freight hauls has stabilized at a level of 44--45 percent. There will be a relatively rapid rate of growth in the proportion of maritime (almost to 25 percent) and ferry (3.6 percent) transportation. The proportion of pipeline transport will be somewhat lower (22--23 percent), while the proportions of river and motor vehicle transport will remain at a comparatively low level (4--4.5 and 0.4--0.5 percent respectively).

While the participation by the specific types of transportation in hauls will continue to vary, in all cases there will be a growth in their absolute volume. This means an increase in the demands for enhancing the hauling capacities of types of transport and the through-put capacities of transport main lines. During the period 1980--2000 a growth is anticipated in hauls by railroad transport amounting to 24 percent, by maritime--46 percent, river--62 percent, motor-vehicle--105 percent, and by ferry--almost 5-fold.

Table 1

Distribution of Freight Hauls in International Transportation between CEMA Member-Countries by Types of Transport (in Percentages)

Type of transport	1980	1985	1990	1995	2000
Railroad	44.9	44.7	43.9	44.1	44.1
Maritime	20.9	22.8	23.7	23.9	24.2
River	3.3	3.9	4.2	4.3	4.3
Pipeline	29.7	27.0	24.2	23.7	23.3
Motor vehicle	0.3	0.4	0.4	0.4	0.5
Ferry	0.9	1.2	3.6	3.6	3.6
Total	100.0	100.0	100.0	100.0	100.0

Table 2

Distribution of Passenger Hauls in International Transportation between CEMA Member-Countries by Types of Transport (in Percentages)

Type of transport	1980	1985	1990	1995	2000
Railroad	26.5	27.6	28.3	27.8	29.6
Air	9.3	9.1	9.1	9.5	10.0
Motor-vehicle	63.3	62.9	62.0	62.1	59.8
Maritime	0.5	0.1	0.2	0.2	0.2
River	0.4	0.3	0.4	0.4	0.4
Total	100.0	100.0	100.0	100.0	100.0

Growth in international transportation of maritime and ferry hauls is leading to a situation whereby, in the internal transportation lines of the fraternal countries, there will be a substantial increase in the role of railroad transport as the main connecting link between the shipping ports and the corresponding economic regions. In this connection, the development of a system of high-priority railroads takes on particular importance.

Studies have fully confirmed the steady trend toward a decrease in hauls of the proportion of the principal bulk-type fuel- and raw-material freight. This is the main conclusion drawn from the forecasting evaluations. Nevertheless, we must not lose sight of the fact that, during the period up to the year 2000,

the absolute volumes of hauls will be growing for all kinds of goods. A particularly large increase is anticipated for the group of goods entitled "Mineral and Chemical Fertilizers" (34 percent during the years 1980--2000). Growth of hauls with regard to the "Metals" group will also be extremely significant (by 32 percent). Here there is a noticeable effect exerted by the development of inter-state production specialization, giving rise to a widespread exchange of various types and grades of rolled metal.

Forecasting the volumes of passenger hauls has shown that by the year 2000 they will have grown by 55.4 percent in comparison with 1980. The most substantial influence on the dynamics of these hauls will be rendered by the numerical growth in the population of the CEMA member-countries, the increase in population mobility under the influence of the increase in the standard of living and the increase in free time, the over-all increase in the workers' well-being, the expansion of the community of the CEMA member-countries.

Along with the general increase in the volume of passenger hauls, there will be a further redistribution of hauls among the types of transport (Table 2).

The most substantial, as the forecast shows, must be the growth by the year 2000 of passenger hauls by motor-vehicle transport (in absolute terms), although its proportion in the total volume of hauls is decreasing somewhat. A growth is anticipated in railroad and air transport. Participation of waterway transport in international passenger hauls remains insignificant.

In 1960 railroad transport accounted for 80.2 percent of the total passenger hauls, in 1970 this figure was 51.3 percent, and in 1980--26.5 percent. After 1980 its share has been rising again (because of a reduction in the proportion of motor-vehicle transport). It is anticipated that in 1985 it will amount to 27.6 percent and in the year 2000--to 29.6 percent.

MOTOR-VEHICLE "TRANSPORT" (BUS AND INDIVIDUAL) until recent times has had the highest growth rate both as regards the absolute volumes of hauls as well as the share of participation in them.

During the period 1960--1980 it rose from 12.7 percent to 63.3 percent within the total volume of hauls. In the future the increase in the volumes of motor-vehicle hauls, in comparison with 1980, could attain 45 percent in the year 2000, while their participation in the total volume of hauls will decrease (59.8 percent).

For the European CEMA member-countries as a whole, bus hauls grew 20-fold in comparison with 1960, while this figure was 8-fold in comparison with 1970. During the period 1980--2000 their increase will amount to 37 percent.

Individual motor-vehicle transport occupies a special place within the system of the CEMA member-countries. To a certain degree, its increase reflects an increase in the population's standard of living.

Hauls by individual motor-vehicle transport for the European CEMA member-countries as a whole grew 53-fold in comparison with 1960 and 7.4-fold in comparison with 1970. For the future, their increase during the years 1980--2000 will amount to only 52 percent.

AIR TRANSPORT within the system of passenger hauls for long-range and medium-range (up to 800--1000 km) distances is the most advantageous and up-to-date mode of transportation.

Its proportionate share in passenger hauls amounted to 9.3 percent in 1980 and will increase to 10 percent by the year 2000. Over the years 1961--1980 passenger hauls by air transport increased almost 9-fold (during the period 1971--1980 they more than doubled); their increase for the period 1980--2000 will amount to 67 percent.

WATERWAY TRANSPORT in passenger hauls between CEMA member-countries is utilized mainly during the summertime for tourist trips. Moreover, maritime and river vessels, thanks to their high degree of comfort, constitute a unique kind of floating rest homes. In 1980 the relative share of maritime and river hauls within the total volume of all passenger hauls was not large, amounting to 1 percent (increases over 1970 were 4-fold and 2-fold respectively). For the future up to the year 2000 maritime hauls will decline, while river hauls will increase by one-third.

Consequently, passenger hauls by motor-vehicle, railroad, and air transport between the CEMA countries are developing successfully.

FORECASTS OF THE TECHNICAL DEVELOPMENT OF RAILROAD TRANSPORT UP TO THE YEAR 2000 envision the introduction of advanced types of traction, above all, electric traction. With electrification, qualitatively new equipment will be utilized--vacuum-type switches, microprocessors, semiconductor-type valves, etc. The capacity of electric locomotives will increase to 5,000--6,000 kW (in the USSR to 12,000 kW), while that of diesel locomotives used in freight traffic will increase to 3,000 kW (in a section) for 1435-mm track, and to 6,000 kW (in a section) for 1520-mm track. It has been proposed to introduce an automatic control system (ASU) for train-type and switcher-type locomotives.

In international transportation the following types of trains will be put into circulation: freight trains weighing 2000--4000 tons for 1435-mm tracks and weighing up to 5000--7000 tons for 1520-mm tracks, passenger trains weighing 500--700 tons and 1000 tons respectively. Trains lengths are forecast as follows: freight trains will be 600--850 meters long, and passenger trains will be as much as 500 meters long. Speeds will amount to 100--140 km per hour for freight trains and 120--160 km per hour for passenger trains.

There will be an increase in the number of specialized cars. Freight-hoisting capacities and axle loads will be increased, brake systems and roller bearings will be improved, etc. Designs of passenger cars provide for increasing their length and passenger seating, climate-conditioning, solar-protective glass windows, telephone communications between passengers and subscribers to the municipal networks, television, etc.

The capacities of the track superstructure will be increased, for the most part, by means of laying heavier types of rails, including those which are heat-treated, continuous [i.e., jointless] track, reinforced-concrete ties, transferring track to crushed-rock and asbestos ballast. In repairing and servicing track, use will be made of highly productive machines, operating as parts of an automatic system.

On the international transportation lines use will be found for a comprehensive system of automated installations for breaking up trains at classification-yard humps, an integrated system of automatic blocking and automatic locomotive signaling for lines with traffic speeds of up to 200 km per hour, an ASU [automatic control system] for controlling train traffic on sections and terminals using computers, etc.

Before the year 2000 it is forecast that new technological processes and methods will appear for organizing and controlling traffic, utilizing automatic control systems (informational systems for border traffic, blocking international freight hauls, effectively keeping tabs on the dislocation of all types of rolling stock engaged in international transportation, ASU's, OPV's [general freight-car pools], ASU's of SPK's [hydrofoils], electronic reservation of seats on passenger trains, etc.).

Further improvement will be attained by the technical means of production in loading-and-unloading operations.

FORECASTS OF THE TECHNICAL DEVELOPMENT OF MARITIME TRANSPORT UP TO THE YEAR 2000 show that there will be a continuation of the previously manifested tendency to increase the average cargo-carrying capacity of a vessel and the proportion of specialized ships within the make-up of the fleets. In connection with the geographical traits of the location and conditions of the ports, the tanker fleet of the CEMA member-countries will be supplemented primarily by medium-tonnage tankers. Ships will also be put into operation for carrying bulk-type cargoes (with deadweights of 25,500 and 100,000 tons), container-carrying ships (with space to handle as many as 1000, 1200, or 1500 ISO [International Organization for Standardization] containers having a weight of 20 tons gross), ships with a horizontal method of loading having cargo-space capacity for 12,000, 30,000, or 60,000 cu. meters, diesel and nuclear-powered transport-barge carriers, refrigerator ships with a deadweight of as much as 15,000 tons. The fleet will likewise be supplemented by multi-purpose, dry-cargo ships of more up-to-date types.

Widespread use will be found for systems for automating the control of ship movements, as well as the control, monitoring, and diagnostics of apparatus of the power plant and auxiliary mechanisms (utilizing microcomputers for these purposes). Automating the operations of maritime ports is of great importance.

ASU will receive further development by maritime transport, i.e., powerful information-calculating complexes based on up-to-date computers and means for collecting, transmitting, representation, and circulation of information. Some of the main trends here will be the assimilation and machine implementation of control tasks.

FORECASTS OF THE TECHNICAL DEVELOPMENT OF RIVER TRANSPORT UP TO THE YEAR 2000 testify to the significant qualitative changes which will occur in the network of waterways. Their length will grow by means of improving the conditions of navigation on the parts which have already been assimilated, particularly by means of man-made waterways.

Development of a network of inland waterways and inter-basin connections allows us to organize the hauling of cargoes by river transport for extra-long distances and to travel through sections with diverse navigational conditions, including maritime ones. In connection with this, there is still maintained a steady trend toward building large-tonnage, self-powered and non-self-powered vessels with good sea-going qualities, ensuring safe navigation through deep-water river routes, reservoirs, and on maritime sections.

Environmental protection merits serious attention. In connection with this, it is necessary that ships' equipment be outfitted with systems for collecting and pumping out petroleum-containing and other waste waters, as well as other installations.

Processing capabilities of river ports must be brought into line with the intended volumes of river hauls by means of further development of mechanized wharves (including those for working with large-tonnage containers), considerable enlargement of warehouse spaces, expanding the network of siding and intra-port railroad tracks and the section for loading and unloading motor-vehicle transport, introducing the "Port" ASU, etc.

FORECASTS OF THE "TECHNICAL DEVELOPMENT" OF MOTOR-VEHICLE TRANSPORT UP TO THE YEAR 2000 provide for a higher intensification of the traffic of motor-vehicle means, while, at the same time, increasing the degree of comfort and safety of highway traffic by means of improving the parameters of these roads and using new materials in building them.

Improvement is anticipated in the quality of road-building operations by means of creating a full complex of machines supporting the entire process of construction.

Within the structure of the rolling-stock pool there will be an increase in the proportion of specialized motor-vehicles and buses for hauling passengers under particular climatic conditions. A large role is being played by the increase in the number of trailers and semi-trailers.

Growth in the freight-carrying capacities of the rolling stock is being ensured by increasing the axle loading, increasing the number of axles, and reducing the weight of the motor-vehicles themselves.

Along with growth in the proportion of heavy-load trucks, provisions have been made for the mass utilization of truck-trailers of enhanced capacities and freight-carrying capabilities. The truck pool will be supplemented by motor vehicles having economical and reliable diesel engines which operate on compressed natural gas.

The determining factors for improving passenger automobiles are: increasing traffic safety, improving the degree of comfort, reducing the level of atmospheric pollution, and decreasing the specific consumption of fuel. Together with improving the traditional types of motor vehicles, new mobile means of automotive transport will be developed.

Particular attention will be paid to creating systems of active and passive traffic safety, as well as reducing the severity of the consequences of highway-transport accidents.

Roads of great length, with automated control, will be put into operation.

FORECASTS OF THE NEEDS OF TRANSPORT FOR THE MOST IMPORTANT TECHNICAL MEANS AND MATERIALS UP TO THE YEAR 2000 bear witness to the fact that transport in all the CEMA member-countries will experience considerable needs for the most important technical means and materials, including electric locomotives, switcher-type diesel locomotives, freight cars and passenger cars, rails and railroad wheels, maritime and river vessels, containers, trucks and passenger automobiles, buses, airplanes and helicopters, railroad track machines, loading-and-unloading machinery, equipment for the automatic control of transport, etc., which will be provided by our own production facilities or by means of imports from other countries.

The many years of cooperation between the CEMA member-countries in the area of planning activity and forecasting transport ties among themselves is convincing evidence that the transport of the fraternal countries is capable of more completely and at a higher qualitative level performing the functions of an effective instrument of socialist integration. For this purpose, as was pointed out in the Declaration of the Participants in the Economic Conference of the CEMA Member-Countries at the highest level: "the CEMA member-countries will carry out harmonized measures with regard to the comprehensive development of reciprocal transport ties, providing, in particular, closer coordination in plans for the development of transport, harmonization of capital investments for the development of the transport infrastructure of those countries which have mutual interests, increasing the throughput capacities of border-area railroad stations, improving the system of planning and the conditions for hauls of import-export goods by all modes of transport, having paid particular attention to the need for improving the conditions of maritime hauls to the Socialist Republic of Vietnam and the Republic of Cuba."

In demonstrating their own advantages, further strengthening and development, cooperation in this field also will facilitate the steadily ongoing progress in the economies of these countries, as well as increasing the prosperity of the peoples of the socialist community.

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INTERSECTOR NETWORK DEVELOPMENT

GENERAL DIRECTOR ON 'SOYUZTRANZIT' ASSOCIATION OPERATIONS

Moscow FOREIGN TRADE in English No 12, Dec 84 pp 18-20

[Article by Anatoliy Nazarov, general director of V/O Soyuztransit: "Aspects of Soyuztransit's Five Years of Activity"]

[Text] In January 1985 the All-Union Foreign Trade Association Sojuztransit, a general operator handling foreign transit cargoes throughout the USSR and third countries, celebrates its fifth anniversary.

The Soviet Union stretches from the Baltic Sea to the Pacific Ocean. Through it run the shortest routes connecting Europe to the Middle East, the Far East and South-East Asia. For instance, the container shipment route through our country linking Europe to Japan covers a distance of 13,000 km, whereas the traditional routes via the Suez, the Panama Canal or round Africa through the Indian Ocean range between 20,000 and 27,000 km. The advantages of the Soviet route are clear and it is hardly necessary to say that foreign consignors often give preference to this route.

The All-Union Association Sojuzvneshtranz was dealing with the cargo transit organization before the establishment of Sojuztransit. To coordinate, specialize and further improve commercial activity connected with the sale of transport services Sojuztransit (Sotra), an all-Union self-supporting foreign trade association, was set up in early 1980. Existing regulations on the carriage of goods through Soviet territory guide the Association's activity as they permit the transit carriage of commercial goods through Soviet territory. These goods are not subject to taxation for countries which have signed appropriate agreements with the Soviet Union. A licence for passing the frontier is issued to the consignor or his agent by the USSR Ministry of Foreign Trade or, on its instructions, by the USSR trade representation in the country of the goods origin.

Sojuztransit has three specialized firms: Sibtransit, Irantransit and Yuzhtransit, whose business is to effect the whole complex of operations relating to the attraction, carriage and forwarding of transit goods depending on the nature and direction of shipments. Sojuztransit takes care of shipments by sea, river, railway, road and air transport, and by mixed transport

means from Europe to Iran, Afghanistan and other countries in the Near and Middle East, the Far East and South-East Asia.

Shipments of transit goods in containers from Japan, Hongkong and other Far Eastern countries to and from Europe, Iran, Afghanistan by the Trans-Siberian Railway have, over the last ten years become particularly popular with West European and Japanese consignors. This carriage system is now called the *Trans-Siberian Container Service (TSCS)*. All the related operations are the concern of the Sibtransit firm.

In September 1982 this route was used to ship the millionth container from Japan to Europe. This is evidence of the great popularity and competitiveness of the Trans-Siberian container line, which has been successfully in operation for the past 15 years and now still attracts ever new business partners. At the celebratory meeting devoted to the passage through Soviet territory of the millionth container held at Vostochny port Mr. Miyamoto, president of the Japanese firm Jeuro, praised the Trans-Siberian Container Service and pointed out its importance for developing trade between the countries of the Far East and those of Europe and the Near East. In 1971 a little more than 2,000 TEUs were carried via this route, in the recent period, however, their number exceeds 150,000 a year. At present the TSCS forms an up-to-date container system of mixed (intermodal) traffic having the shortest route linking Europe to the Far East. Using the Trans-Siberian Container Service are the forwarding firms Jeuro, Yamashita, Nissin and Nippon Express in Japan, Kühne und Nagel, Danzas, Schenker in Europe, and others. The TSCS is used regularly by such Japanese firms as Mitsubishi, Hitachi, Nissan, Toyota, Honda.

Sojuztransit is responsible for the acceptance of containers from European railways at Soviet frontier stations and their shipment by rail to the ports of Nakhodka and Vostochny, their transshipment, the pro-

vision of sea tonnage for shipping cargoes to and from the ports of destination.

To feed transit goods to the Trans-Siberian Railway, four kinds of traffic linking organizations have been set up: Transrail, Transsea, Tracons, Transair.

Transrail ships cargoes from the Soviet frontier stations of Luzhaika, Brest, Chop, Ungeny, Djulfa and Kushka to and from Far East seaports. Transportation time—25 to 30 days.

Transsea organizes container shipments from the West European ports to the Soviet Baltic, Azov and Black Sea ports with their further delivery by rail to the ports of Nakhodka and Vostochny including their transshipment onto sea vessels for delivery to and from the ports of destination. Transit time—35 to 40 days.

Tracons handles road container shipments in both directions from various towns in Europe to Vysoko-Litovsk (near Brest). From Brest the containers are shipped by rail to the ports of Nakhodka and Vostochny for further delivery by sea to ports of destination and in the reverse direction. Transit time—40 to 45 days.

Transair is responsible for shipments of containers by Aeroflot from Luxemburg or Berlin via Moscow to Vladivostok, and then by road to Nakhodka or Vostochny, further by sea to Japan. In the reverse direction the containers are transported to Vladivostok and then by plane to Luxemburg or Berlin with the last step to their destination by road. Transit time—10 to 14 days.

To assist the above functions the Association has appropriate agreements with carriers—Soviet railways, Soviet shipping companies, the road transport organization Sovtransavto, and Aeroflot.

Carriage by land uses the railroads running from the Soviet western frontier to Primorye. Containers are shipped by express goods-trains. These trains (block-trains) are marshalled in the port of Leningrad and at the railway stations in Brest and Vysoko-Litovsk. In the reverse direction express goods-trains are marshalled in the ports of Vostochny and Nakhodka. Containers are grouped so that they are sent directly to one destination point either Brest, Chop or Vysoko-Litovsk on the western frontier or Leningrad port.

The maritime section of the TSCS is served by vessels of the Soviet Far Eastern Shipping Company and those of the Japanese shipping companies Yamashita Shinnihon and Iino Kayun. To maintain the services at a high level and observe parity between the flags the parties allocate an optimal number of vessels. At present four Soviet and four Japanese container-carriers with a total capacity of 3,380 TEUs are in service.

Vessels of the Far Eastern Shipping Company sail regularly to Australia, Hongkong and Manila.

Irantransit firm concerns itself with shipments in the Iranian direction (except containers handled by the TSCS and direct shipments by road).

Shipments to Iran are effected by different transport facilities.

Besides the traditional direct rail shipments, the *Caspian-Volga-Baltic Line* (CVBL), has become quite active since 1965, which serves the shortest waterway connecting West European ports with Iran's Caspian

ports of Anzali and Now Shahr via the inland waterway system of the USSR. This line has river-sea-going vessels, each of which is capable of carrying up to 3,000 tons of various goods. The experience gained from running this line made it possible in 1972 to arrange direct shipment of transit goods to Iran by the *Mediterranean-Caspian Line*. It takes three weeks for cargoes loaded at Mediterranean ports to reach Iran's Caspian ports via the Black Sea and the Volga-Don Canal.

The navigation period for the vessels of these two lines lasts six months—from May to October. Cargoes are attracted through Sojuztransit's agents with whom appropriate agency agreements have been signed. Every year at the start of the navigation season Sojuztransit organizes agents' conferences in different countries. The results of the past year's work are summed up and their joint activity with the Association for the next year discussed. Representatives of the RSFSR River Fleet Ministry, whose vessels serve these lines, attend these conferences.

The twentieth, celebratory conference of CVBL's agents, will be held April 1985 in Leningrad.

It should be noted that the ships of the Caspian-Volga-Baltic Line and the Mediterranean-Caspian Line carry goods important to Iran, such as fertilizers, sawn timber, metals, etc. The services provided by these two lines are of advantage to all the participants in purchase and sale transactions.

Sojuztransit also organizes shipments of goods to Iran by rail-and-water transport from the Danubian countries and their transshipment in the port of Izmail and the Black Sea ports Poti and Batumi with their subsequent delivery by rail to the Iranian towns Djulfa and Astara.

Also becoming quite extensive are shipments of transit goods in large-sized containers from the European countries to Iran, which are handled by the *Trans-Caucasian Container Service* (TCCS).

In recent years increasing popularity has been gained by shipments of goods to Iran by road. Sovtransavto's motor-vans transport foodstuffs and other goods to that country. They make 500 runs a month. Use is also made of canvass-covered semitrailers. Yuzhtransit deals with the road shipment of goods to Iran; it also organizes direct railway and mixed goods carriage in containers and in wagons from the West European countries through the frontier stations Chop, Brest, Ungeny and Luzhaika, through the Soviet Black Sea and Baltic ports to Afghanistan and India and transportation in the reverse directions.

The Association likewise ships to Afghanistan foreign trade goods in containers by road through Hairaton to specific towns in this country. The transit time for goods and modes of transport are in the main selected by the client.

Although Sojuztransit is a fairly young association it operates quite confidently on the transport services market. It provides an efficient service over the traditional transit routes and quickly makes new ones familiar.

Success in commercial operations connected with the sale of Soviet transport services to our foreign clients for shipping transit goods through Soviet territory lies in constant improvement of these services, and the Association's staff exerts all efforts with this aim in mind.

EXPERIMENTAL SYSTEMS

CURRENT DEVELOPMENT, APPLICATIONS OF AIRSHIPS IN USSR

Moscow MOSKOVSKAYA PRAVDA in Russian 18 Dec 84 p 3

[Article by APN reporter Yevgeniy Gol'tsman: "The Rebirth of the Airship"]

[Text] A half-century ago many scientists and engineers were convinced that airships soon would take their place among the museum exhibits. Today, another opinion prevails: they are being referred to as promising transportation in the near future.

Some of the airships built in the 1930's were 200 meters long, capable of carrying 50 to 80 tons of cargo and coping with distances of up to 12,000 kilometers. Crowds of thousands of enthusiastic people used to gather to put these giants into the air. However, specialists always have regarded the airships with skepticism. There were few who seriously believed in the prospects for wide economic application of controllable lighter-than-air aircraft.

In our day, when aviation is being developed intensively, airships are again beginning to be discussed. State design bureaus in Moscow are now engaged in designing these aircraft. In Leningrad, Kiev and other cities, design bureaus organized by airship building enthusiasts are working on the voluntary service principle. There are many orders for airships. They are needed by oil workers, construction workers and power engineers. In a word, the airship is experiencing a rebirth. What is the reason for this? This question is answered by Mikhail Derkovskiy, chief of the Department of Dynamics of Flight and Envelope Materials of the "Energoaerotrans"* Special Design Bureau and candidate of technical sciences.

"The revival of airship building is connected primarily with the relative economy of this form of transportation," says Mikhail Derkovskiy. "As is well known, airplanes and helicopters use about half of their power to create lift. The airship either consumes no fuel at all to support itself in the air or it consumes a minimal amount. In addition, airplanes need special landing fields,

* "Energoaerotrans" is a special planning and design department of the All-Union institute "Orgenergostroy" of the USSR Ministry of Power and Electrification.

the construction of which can be justified only if regular air communication is anticipated. Under real conditions, one-time flights often have to be made. The airship can fly on any route and load and unload in any locality."

So the airship is a transport which is capable of making cargo and passenger flights to remote, almost inaccessible regions. But this does not exhaust its range of application, of course. Owing to their high maneuverability, airships also may be used successfully in construction and installation operations.

Modern airships ascend up to an altitude of 30 kilometers. They are able to carry out aerial photography, take part in geological surveys, keep track of the movement of schools of fish in the ocean, collect weather information, and help to escort ships through the Northern Sea Route. A relay installed on an airship which ascends to only a few kilometers makes it possible to provide for stable transmission of a clear television signal in areas of a locality with irregular topography. It is difficult to enumerate all the possibilities for using airships. One thing is clear: the demand already exists today for a large number of medium-sized aircraft, that is, those which lift 10 to 15 tons of cargo, are about 100 meters in length, and have an aerostatic envelope with a volume on the order of 600 cubic meters. Two motor vehicle engines are quite adequate as powerplants for such airships.

Similar aircraft already are being developed, and construction of them has been begun. They differ from earlier models chiefly by their high reliability. For many years the basic working gas filling the aerostatic envelope was hydrogen. Hydrogen is a flammable gas, and it is dangerously explosive in a mixture with air. Its use was one of the reasons that airships were discredited. The hydrogen was replaced by nonflammable helium. This substantially increased the safety of flights. But today, helium does not satisfy the designers fully, either.

Mikhail Derkovskiy explains:

"Helium is an expensive gas. This places definite limitations on its use. And when a gale or a hurricane approaches, the airship must descend to the ground in order to be saved, and the gas must be let out of the aerostatic envelope and stored somewhere. This is not a simple problem. For this reason, the search for gas mixtures which have buoyancy that is sufficiently high and which are substantially less expensive than helium is an extremely important task. A possible alternative to airships with helium are so-called hot-air aerostats [teploviki], that is, aircraft with aerostatic envelopes filled with preheated air or steam."

The development of materials suitable for making a reliable aerostatic envelope is an important direction for research by airship builders. The materials should be durable and resistant to changing atmospheric conditions, solar radiation, and temperature fluctuations from minus 60 to plus 50 degrees. They must possess high electric conductivity, which is extremely important because of the danger of a buildup of charges of static electricity on the envelope surface, which can lead to accidents. The materials should be of technical

grade, that is, those that can be bonded together or sewn sufficiently easily, and so that the seam or place that is bonded is highly durable. Finally, the envelope materials and the entire airship should be of minimum weight. The aerostatic envelope is the part of the airship that deteriorates most rapidly. The materials that have been developed by Soviet scientists make it possible to extend its period of service up to 3 to 5 years.

Giant disk-shaped airships are being designed at the Moscow Aviation Institute. The disk shape provides the aircraft with additional aerodynamic lift. An airship filled with hot air and with an outside diameter of about 150 meters will have a carrying capacity of 300 tons and a flight range of 4,000 kilometers. It will have a speed of 150 kilometers per hour. A platform will be mounted in the central part of the airship which may be lowered to the ground by slings so that loading and unloading may be carried out without landing. The powerplant of the giant airship will be roughly the same as that used by the well-known Tu-114 passenger airplane--four turboprop engines which operate on kerosene or liquefied natural gas, but fuel consumption will be four to five times less than with the airplane.

Today some of the schemes and designs of the airship builders seem too bold. Certainly wide use of airships is a matter for the future, but the future is very close. Only a few years will pass before airships become a means of transportation which is just as important as airplanes, helicopters or motor vehicles.

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